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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR JULY 1870.

ART. I.—*The Treatment of Syphilis by repeated Inoculations of Matter derived from Venereal Sores: so-called Syphilization.* By FREEMAN J. BUMSTEAD, M. D., Professor of Venereal Diseases in the College of Physicians and Surgeons, New York. (With a wood-cut.)

THE treatment of syphilis by the repeated inoculation of venereal matter, proposed by M. Auzias-Turenne in 1844, subsequently tested by M. Melchior Robert, of Marseilles, and practised to a large extent with doubtful results by M. Sperino, of Turin, has of late years been revived in Norway, where it has attracted great attention and called forth violent discussion. Rumours—nay, direct testimony as to its efficacy coming from impartial observers visiting this distant region, and the importance of certain pathological questions which it involves, demand that its claims should receive more attention than they have yet had either in this country or abroad.

The chief advocate of this system has been Prof. W. Boeck, of Christiania, who, in 1862, under the auspices of the Norwegian Government, issued a large and laborious work, in which were reported 252 cases treated by "syphilization," and the results compared with those obtainable by mercury and other modes of treatment.

In the autumn of 1865, Prof. Boeck visited England, and treated in this manner twenty-seven cases at the Lock Hospital of London, at the invitation of the attending surgeons. Messrs. Lane and Gascoyen were appointed a committee to report upon the progress and result.[1] These gentlemen, while acknowledging the disappearance of syphilitic symptoms under repeated inoculations, expressed the opinion that "syphilization is not a treatment which can be recommended for adoption; that even if it could be admitted to possess all the advantages claimed for it by its advocates,

[1] Medico-Chirurgical Transactions, vol. l.

its superiority over other modes of treatment, or in many instances over no treatment at all, would not sufficiently compensate for its tediousness, its painfulness, and the life-long marking which it entails upon the patient." As may readily be supposed, this verdict was less acceptable to Prof. Boeck and his friends than to his opponents. In justice to the former, however, it should be observed that the prejudice against "syphilization" in England has from the first been very strong, and its claims have been listened to, if at all, by very reluctant ears. As an instance of this fact, it may be mentioned, that a copy of the favourable report of a Norwegian committee appointed to investigate "syphilization," which I shall hereafter quote, was sent to every medical journal of Great Britain, at the time of its publication, several years ago, but has not been noticed by a single one of them up to the present day.

About a year ago, Mr. Jonathan Hutchinson, of London, who is well known for his contributions to our literature of venereal diseases, and as an able and impartial observer, made a tour through Norway, and published in the numbers of the *Medical Times and Gazette* for 1869, accounts of what he saw of "syphilization," which must be regarded as decidedly favourable to the practice.

During the last seven months, Prof. Boeck has been in this country, and I have had the opportunity of observing his practice in my wards at Charity Hospital, where he kindly consented to take charge of a number of cases, and treat them by "syphilization." It may be well for me to remark at the outset that I have not become a convert to his practice, but he has enabled me to observe phenomena of no slight interest, and of great scientific importance, which I was before unwilling to believe on imperfect testimony; and I desire above all to testify to the private worth and the earnest, simple sincerity of the man himself, and claim for him an impartial hearing. Whatever may be thought of the *practical value* of "syphilization," I venture to predict that it will in future be recognized as having added much to our knowledge of the pathology of venereal diseases.

The claims of Prof. Boeck and his friends are these, that syphilis may be cured by the repeated inoculation of venereal matter, and that the relapses after such treatment are by far less frequent than after any other method.

The number of cases treated at Charity Hospital was only five; four in which no previous treatment had been adopted, and one old case of syphilis, in which all previous treatment had failed. One of the former cases eloped, so that the number of cases in which the treatment had a fair trial was really reduced to three. Of course this small number cannot be offered as a test of the value of "syphilization," except when taken in connection with those cases observed in England and with those reported in Norway, and it is only in this light that they are here reported.

Prof. Boeck insists upon the division of syphilitic cases into two classes,

those which have received no treatment at all, or at least no mercurial treatment, and those in which this mineral has already been administered. He regards the former class as alone adapted to experience the full benefit and exhibit the merits of his mode of practice. In the latter class, he maintains that the treatment is much more tedious, that relapses are more likely to occur, and the final result is uncertain. He occasionally undertakes them, but only at the urgent request of the patient, and upon the latter's responsibility. As an evidence of his strong feeling on this point, I will mention the fact that an interne in charge of a patient undergoing "syphilization" at Charity Hospital, gave him one day two compound cathartic pills to relieve constipation, and Prof. Boeck attributed to the mercury therein contained certain unfavourable symptoms which occurred several weeks afterwards.

"Syphilization" is never employed for a chancre alone before the development of secondary symptoms; but the sooner it is resorted to after the appearance of the latter the better.

Matter employed for the Inoculations.—In his earlier inoculations Prof. Boeck employed only matter derived from chancroids. He states that for the last few years in Norway he has used the virus of "hard" (true) chancres, which, after the example of Mr. Henry Lee, of London, he has succeeded in inoculating upon the patient himself after first stimulating the sore to discharge a purulent secretion, by the application of dry lint or some irritant, as savine powder or ointment. If the inoculations do not take, they are repeated daily, and may succeed even after several weeks' failure. Some German physicians have resorted to passing a filiform seton through the indurated base of the sore in order to render its secretion inoculable, but Prof. Boeck regards this practice as dangerous. In some instances all these attempts to auto-inoculate the secretion of true chancres fail. When successful, a pustule is developed without incubation in the course of forty-eight hours; there is no induration of its base or of the neighbouring lymphatic ganglia; the secretion is re-inoculable, and, in short, the phenomena are the same as if chancroidal matter had been used. Prof. Boeck believes, however, that when such matter is employed for "syphilization" that the duration of the treatment is shortened, and the effect rendered more certain. Dr. Gjör, of Christiania, has also succeeded, although with difficulty, in auto-inoculating the secretion of mucous patches, and has employed this matter in the "syphilization" of patients. In the cases at Charity Hospital, with one exception, the matter was derived from soft sores (chancroids). I shall refer to this point hereafter. The chancroidal matter was always first auto-inoculated upon the patient bearing the chancroid, and the secretion of the pustules thus produced was afterwards transferred to the patient whom we wished to "syphilize."

How the Inoculations are made.—The sides of the chest are selected for the first inoculations, because on this part of the body the resulting

sores are found to be smaller and to show less tendency to phagedenic action than elsewhere. Moreover, the distance of lymphatic glands renders the possible occurrence of glandular inflammation less probable. Three inoculations are made upon each side below the nipples. Pustules are usually developed within forty-eight hours, and, on the third day, matter is taken from one or more of these and re-inoculated. Care is taken that the successive inoculations are not too near each other, lest they should happen to coalesce and form troublesome sores. Thus, if the first were made just below the nipples, the second are made at some distance below, the third towards the right, the fourth to the left, and so on. In keeping a diagram of the inoculations, however, they are represented as approximated for the sake of convenience. This process is further continued, always taking the matter from the last series every third day. It will occasionally happen that some intercurrent disease, as a severe cold, some febrile attack, etc., will prevent the success of the inoculations, in which case they are to be repeated daily, employing matter from the last pustules formed.

Continuing this process, it is found that the pustules and resulting ulcers gradually become smaller and smaller, until they are too minute to furnish matter for further inoculations, or that the inoculations fail altogether. Fresh matter from some other source is then obtained, and inoculated in the same manner as the first, as long as it will take. This series of inoculations will usually be found to be less severe and fewer in the number of its generations than the preceding. Virus from a third and fourth source may then be tried, but sooner or later the walls of the chest will cease to react under the stimulus of any matter whatever, and immunity of this portion of the integument is obtained.

The same process as that now described remains to be performed upon the arms, and subsequently upon the thighs. The matter may at first be taken from some of the old inoculations upon the chest, and, when this ceases to act, from other sources.

When, finally, these three regions, viz., the chest, the arms, and the thighs, cease to react under the insertion of venereal matter, the treatment is regarded as complete. Should any relapse of the syphilitic symptoms subsequently occur, a few inoculations, according to Prof. Boeck, will be sufficient to dissipate them, the complete immunity of the skin having meanwhile disappeared in most cases.

Such is a general description of the process of "syphilization." Prof. Boeck insists especially upon the importance of carrying out its details, a number of which are here necessarily omitted. He states that years of labour have been required for the full elaboration of his treatment. I once expressed to him the opinion that it would be extremely difficult for any one to carry out this process in a proper manner from any mere description without having seen it done, and to this remark he gave his full assent.

In order to be of any benefit, syphilization, once commenced, must be followed up until complete immunity is attained. The most frequent and effective argument employed by Prof. Boeck with recalcitrant patients was that they would be left in greater danger than ever if this mode of treatment were not pursued to the end.

Prof. Boeck's manner of keeping a record of the inoculations, of their success or failure, and of the source in each instance from which the virus was derived, is quite ingenious. A rough outline of the human frame is drawn upon a sheet of paper, and the inoculations are noted in the form of small circles, with the accompanying date. If any points fail to take, the corresponding circles are filled up with black, as shown in the accompanying cut of Benner's case (see p. 23), where the numbers stand for the days of the month, and the letters are the initials of the respective months.

[If, in any instance a series of inoculations is not continued, although the chart shows that the last were successful, it is to be inferred that the amount of matter in the last pustules was not sufficient for further inoculation.]

The following cases, in which "syphilization" was employed at Charity Hospital, are briefly reported:—

CASE I.—Wm. Benner, aged 18, admitted Oct. 5, 1869. Discharged Feb. 26, 1870.

History.—First and only act of sexual intercourse July 27, 1869. Sore upon internal surface of prepuce appeared three weeks afterwards.

Present condition.—No previous treatment. Chancre nearly healed. Its induration still marked. Decided induration of glands in both groins. Roseola commencing on chest and abdomen.

Summary of inoculations.—Inoculations commenced Oct. 8, 1869, with matter from Alexander Johnson (soft), upon the chest. This ran through eight generations upon each side, when it failed.

New matter taken from John Finlay (soft), Oct. 31st, and inoculated upon the chests, ran through six generations on each side, and then failed. Subsequently matter from Downing (soft), and Gillum (soft), was inoculated upon chest, and was successful, although the pustules generally were small, through about eleven generations on each side, terminating Dec. 22.

174 *Inoculations upon the chest, of which* 87 *failed.*

On Nov. 18th inoculations were made upon the arms with matter taken from inoculations upon the right chest of Nov. 12th, originally derived from Finlay. This ran through six generations on each arm, when the pustules became so small that there was not sufficient matter for further inoculation.

Matter was afterwards taken from Gillum and inoculated upon the arms, and ran through ten generations.

114 *Inoculations upon the arms, of which* 31 *failed.*

The thighs were first inoculated Dec. 7th, with matter from his own arms, which ran through twelve generations upon each thigh. Matter subsequently inoculated from various sources succeeded for six or seven generations. Fresh matter from Farrell failed.

Number of inoculations on thighs 153, *of which* 58 *failed.*

Progress and result.—Oct. 26th, eruption about the same. Has suffered

from diarrhœa, loss of appetite, and malaise, the last few days. Prof. Boeck ascribes to this fact the failure of a number of the inoculations.

Nov. 1. Eruption improved.

21*st.* Iritis of both eyes, not severe. Ordered collyria of atropia. General condition, which for a time was much depressed, is now much improved.

28*th.* Iritis nearly gone.

Dec. 13. Roseola has disappeared, except upon the back.

Jan. 6, 1870. No traces of the eruption. General condition excellent. Face quite fat.

12*th.* One of the scabs upon the patient's right thigh has been rubbed off, and the underlying ulcer has taken on phagedenic action and is surrounded by an inflammatory areola. Loss of appetite, and general febrile reaction. Ordered tinct. ferri chloridi gtt. xxx. every three hours.

15*th.* Ulcer on thigh is about one and a quarter inches in diameter, and penetrates to the muscular tissue beneath; its floor is covered with a thick and copious purulent secretion; the skin surrounding it is highly inflamed for the extent of an inch in breadth, and the surface of the thigh for many inches beyond is swollen and œdematous. The whole aspect of the sore is very alarming, and Prof. Boeck himself is quite anxious with regard to the amount of destruction of tissue it may involve.

18*th.* Ulcer on thigh is assuming a more healthy aspect.

24*th.* Surface of ulcer has cleared off, and is covered with healthy granulations.

Feb. 26. Patient discharged. No traces of syphilis. General condition excellent. Some of the ulcerations produced by the inoculations not yet healed.

CASE II.—John Finlay, aged 26, admitted Oct. 20, 1869. Discharged Feb. 10, 1870.

History.—No previous attack of syphilis. Had connection early in August. Chancre appeared upon glans penis about August 18th. Noticed an eruption upon chest and abdomen September 20th. Was treated in the city for primary sore, but nature of remedies unknown.

Present condition.—Induration of glands of both groins, of epitrochlear glands, and of one post-cervical gland, well marked. Chancre healed, leaving slight induration. An eruption of roseola covers the thorax, abdomen, arms, and thighs.

Summary of inoculations.—Inoculations commenced upon *chest*, Oct. 21, 1869, with matter from William Benner (previous case). This ran through eight generations on the right chest and seven on the left, terminating November 12th.

Nov. 15. Fresh matter was inserted in the chests from Downing (supposed to be hard). This ran through only three generations on one side and two on the other.

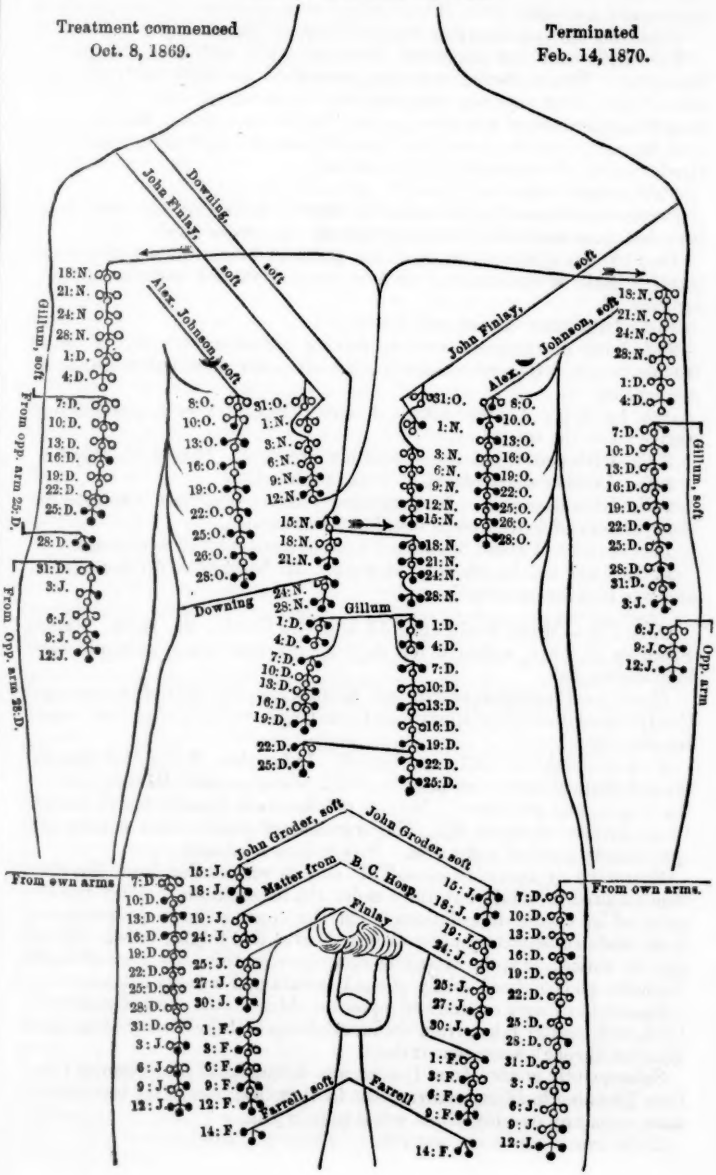
28*th.* Matter was again taken from Benner and went through three removes.

Dec. 10. Matter from Gillum (soft) ran through five generations on the right chest and three on the left.

Total number of inoculations upon chest 132, *of which* 55 *failed.*

Arms were first inoculated November 11th, with matter from Downing, which took for three removes on right and seven on left. Matter from

Case of WILLIAM BENNER.



Gillum and from Benner afterwards went through nine generations on right and six on left.

Total inoculations on arms 104, *of which* 45 *failed.*

The thighs were first inoculated December 12th, with matter from his own arms. This succeeded in eleven generations on right and twelve on left. Upon three separate occasions afterwards matter was taken from Benner and inoculated upon thighs, but failed every time. Matter, however, brought from Brooklyn City Hospital, and also that taken from John Groder (soft), succeeded in six generations.

Total inoculations on thighs 138, *of which* 52 *failed.*

Progress and result.—November 9, eruption fading on chest and abdomen, but more marked in lower extremities. Appetite good.

Dec. 10. Complains of malaise and pains in knees, elbows, and other joints. Iritis is commencing in both eyes. Ordered collyrium of sol. atropiæ.

13*th.* Iritis more intense and painful.

22*d.* Iritis disappeared without leaving adhesions of iris or other trouble in eyes. General condition good, although pains still continue in extremities.

Jan. 12, 1870. Another attack of iritis. Patient very despondent and restive under the treatment.

15*th.* Iritis better. General condition excellent. Face noticeably fat.

20*th.* Another sharp attack of iritis in left eye.

24*th.* Iritis improved. No treatment whatever has been employed for these attacks of iritis, except instillations of atropia.

February 10. Patient discharged without any syphilitic symptoms.

Patient was seen by me May 3d, 1870. He had had no further trouble, and was looking remarkably well.

CASE III.—Moses Foult, aged 32, admitted October 26, 1869. Eloped February 23, 1870, within a few days of the time when he would have been discharged.

History.—Chancre appeared two months ago, ten days after exposure. Condylomata made their appearance in the neighbourhood of genital organs ten days ago.

Present condition.—Chancre healed. Induration of inguinal ganglia. Condylomata abundant on integument of penis, scrotum, internal parts of the thighs, and perinæum. Mucous patches upon tonsils, fauces, and internal surface of upper lip. Engorgement of post-cervical glands, and epitrochlear gland of right arm. No previous treatment.

Summary of inoculations.—This case is remarkable from the short time required to obtain immunity under the inoculations. After the first series of successful inoculations upon the chest, a large proportion of those made subsequently upon the chest, arm, and thighs, failed. It will also be noticed that the syphilitic symptoms in this case were of a mild character, and consisted chiefly of condylomata and mucous patches.

Inoculations were commenced upon the sides of the chest, October 31, 1869, with matter taken from the inoculations of John Finlay (Case II.). This ran through seven generations.

Subsequently matter from Benner was successful in four removes; and from Downing in seven removes; but in these last, out of six inoculations made upon any one day, three would usually fail.

Total inoculations on chest 189, *of which* 97 *failed.*

Inoculations upon patient's one arm, the other having been amputated at shoulder-joint, were commenced with matter from Downing, November 24, but failed to take effect. On November 28, matter from Benner also failed. On December 1, matter from Carlin (soft) succeeded and ran through six generations. Subsequently, matter from Benner, which had before failed, succeeded and went through five removes. Finally, matter brought from the city hospital, Brooklyn, and that taken from Groder, and from Finlay, were tried without result.

Total inoculations on arm 69, *of which* 36 *failed.*

Inoculations were commenced upon the thighs, December 12, and were continued with matter from various sources, but with very slight success. As a general rule, they would not take at all, or would succeed for only one or, at most, two generations.

108 *inoculations in all were made upon the thighs, of which* 85 *failed.*

Progress and result.—This case progressed very much as if the patient neither had syphilis, nor was undergoing the process of syphilization. His syphilitic symptoms gave him but little annoyance, and the ulcers arising from the inoculations were generally so small, that he had no reason to complain as all our other patients did. No local treatment was applied to the condylomata; they were simply ordered to be kept clean. They showed little or no improvement until about December 13.

January 13, 1870. A few condylomata remain on internal surfaces of thighs and scrotum. Prof. Boeck advises "touching these with a crayon of nitrate of silver, since the result of recent inoculations shows that the patient is nearly cured." General condition very good; has gained decidedly in weight.

February 12. Several mucous patches of the fauces have recently appeared. Prof. Boeck remarks that "they are very common towards the close of 'syphilization.'" Ordered to be touched with crayon of nitrate of silver.

23*d*. Patient eloped. The condylomata about the genitals had disappeared. A single mucous patch remaining on the lip, attributed by Prof. Boeck to his smoking a short pipe, was the only syphilitic symptom left.

CASE IV.—Thomas Downing, aged 20, admitted September 20; eloped December 24.

This patient entered the hospital with a commencing chancre, which was followed by an eruption of roseola.

Inoculations with the secretion of his own ulcer were commenced upon his chest October 24, and were repeated daily. At first they proved entirely unsuccessful, but pustules followed the inoculations of October 31, which were found to be re-inoculable, and were continued upon his chest through eleven generations. Some of this matter was also employed, as already noted, in the "syphilization" of the cases previously reported. The early elopement of this patient prevented our observing the effect of the treatment.

The only interest that this incomplete case had, was with reference to the apparent success of the auto-inoculation of a true chancre. Unfortunately, the inoculations were made by Prof Boeck, as was his habit in all these cases of "syphilization," by means of one and the same lancet with which he would inoculate one patient after another, without washing the instrument, but simply wiping it upon a dry towel after every time it was used. This fact rendered any certain conclusion as to the source of the virus impossible.

CASE V.—Mary Stapleton, aged 27. Patient has been an inmate of the hospital several times before, for secondary syphilis, which was contracted four years ago. She has been freely treated by mercury, iodine, cod-liver oil, Donovan's solution, etc. etc., but is still suffering sadly from her old complaint. Undoubtedly, the great obstacle in the way of her improvement has been her intemperate habits. She is now employed as nurse in the hospital, and having access to the stimulants ordered for the patients, is rarely seen when not more or less under the effect of liquor. This fact should be borne in mind in connection with the poor success of our attempt at "syphilization," which, however, she was anxious to try, and which we consented to apply in spite of her infirmity.

Present condition.—A dry tubercular eruption occupies the back, extending from the upper edges of the scapulæ to the lumbar region, and from three to five inches in breadth. Both lips are swollen and their surface denuded of epithelial covering. The tongue anteriorly is hypertrophied and ulcerated. General health deteriorated. Appetite poor. Bowels constipated.

Summary of inoculations.—In general, the inoculations took very poorly and it was often extremely difficult to obtain the slightest effect with any kind of virus in our possession. The sources from which the virus was taken (all of them soft) were so numerous, and so frequently changed that I shall not enumerate them.

In all, 87 inoculations were made upon the chest, of which 45 failed; 120 inoculations upon the arms, of which 90 failed; and 114 inoculations upon the thighs, of which 69 failed.

Progress and result.—November 18. Patient is improving in her general appearance. No change in the eruption.

December 5. Patient complains of nocturnal pains in the head. Prof. Boeck orders gr. x potassii iodidi three times a day.

13*th.* Eruption on back decidedly improved.

20*th.* General health still improving and eruption fading. The iodide of potassium is suspended on account of its producing a pustular eruption on face.

January 3. Not doing so well. Now confined to the bed, chiefly in consequence of the soreness of the inoculations and the difficulty of motion. Several glandular swellings have appeared in the sides and back of the neck, of the size of an English walnut, and threaten to suppurate. There is also one directly in front of the left ear. Complains of entire loss of appetite and copious night-sweats. Her thighs are extremely sore from the ulcerations which are covered with ecthymatous scabs, an inch and a quarter in diameter. Water dressings ordered.

I asked Prof. Boeck for an explanation of the threatening abscesses in the neck. He replied that they were due to the "revolution (?) in her system;" that they often occurred in old syphilitic subjects previously treated by mercury, and that they would do the patient good.

Jan. 20. Swellings in neck have failed to suppurate, and are subsiding.

Feb. 26. No inoculation has been made since the 6th of February. For the last two weeks patient has been taking a decoction of sarsaparilla and senna leaves, with the addition of five grain doses of the iodide of potassium three times a day.

The back is still covered with the old eruption, slightly faded in some places, and in others covered with thick yellowish crusts or lamellated scales.

Two weeks ago a spot of ecthyma appeared on her leg, going on to ulceration, and forming a circular ulcer of one and a half inches in diameter. Its edges were inflamed, and its discharge profuse. This was treated by Prof. Boeck with an ointment containing a scruple of camphor to an ounce of simple cerate, with little improvement.

Subsequently to this, several ulcerations appeared on the tongue, and attained an inch in diameter. They gave rise to very profuse hemorrhage, lasting for several hours. The patient was perfectly blanched and apparently moribund. Bleeding, however, was finally arrested by the pernitrate of iron.

May 4. Syphilitic symptoms not changed.

The patient's habits have been of the worst character, and she has been daily under the effects of liquor, in spite of every precaution. Hence the unfortunate result of the treatment cannot fairly be charged to the inoculations.

Effect of "Syphilization."—As I remarked at the outset, these few cases are intended to *illustrate*, rather than prove, the effect of "syphilization." Their number is too small for the latter purpose. I may be allowed, however, to state the impression which they formed upon my own mind, that these inoculations did have a decided effect in causing the disappearance of syphilitic manifestations, more especially those upon the skin, and that the influence upon the general condition of the patient was most favourable. I am referring, of course, to those cases which had not been subjected to previous medication, and in which, only, the treatment had a fair trial.

From a careful perusal of the cases reported by Prof. Boeck, of the cases given in the paper of Messrs. Lane and Gascoyen, and of those afforded by several other observers, I believe the following is a fair conclusion as to the immediate effect of this mode of treatment:—

Commonly no effect upon the syphilitic symptoms is perceptible for about three weeks. During the fourth or fifth week these symptoms improve, and especially the early eruptions upon the skin, which gradually fade away, and are the first to disappear. The lesions upon the mucous membranes and those situated near the outlet of mucous canals, as mucous patches, and condylomata, are more obstinate. Very much depends upon the habits of patients. If tobacco is avoided, if cleanliness is observed, mucous patches of the mouth and condylomata about the anus and vulva may also show a marked improvement. Otherwise, these may persist or even become aggravated, and still remain after the process of "syphilization" appears to be accomplished. [I would remark that this is also true after the mercurial treatment of syphilis.]

During "syphilization," attacks of iritis are common, and not unfrequently occur towards the termination of the case. No change of treatment is necessary, except the employment of a collyrium of a solution of the neutral sulphate of atropia (gr. ij–iv ad aquæ ℥j) three or four times

a day, and the patient is not restricted with regard to ordinary exposure to light.

The effect of these inoculations upon the general condition of patients is certainly surprising. Their appetite improves; they increase in weight; and their whole aspect is changed for the better.

By the time the treatment is completed, as judged by the immunity to further inoculations, all syphilitic symptoms have commonly disappeared. [Prof. Boeck cautions us not to try to shorten the treatment by inoculations oftener than once in three days, lest immunity should be obtained before all the symptoms have had time to disappear.] The time ordinarily required for immunity, when mercury has not been given, is three and a half to four months.

In proof of the fact that repeated inoculations do exercise a favourable influence upon syphilitic manifestations, and that they effect their disappearance, at least for a time, it is unnecessary for me to refer to the testimony already alluded to, or that of others which has appeared in various medical periodicals. It is desirable, however, in justice to Prof. Boeck, to quote the conclusions of a report presented to the Medical Society of Christiania at its Session, April 22d, 1863, by Dr. Steffens, Physician to the Corporation of Christiania, Dr. Egeberg, and Prof. Voss, M.D., "a committee appointed to investigate the merits of a system of treatment known as syphilization," especially as this report has never before been published in English:—

"The undersigned, invited by Prof. W. Boeck to act as a committee in attending a series of experiments in which syphilization was made use of, and more particularly for the purpose of attesting to the results derived from this method of treatment, have, for a period extending from the beginning of the year 1856 until 1859, attended to this commission, through repeated visits to the particular wards in the hospital where said investigations were conducted. We have recorded the symptoms of disease present at the commencement of treatment; the changes which took place in the nature of the disease and condition of the patients during the influence of the same; and, further, the state in which the patients were discharged from the hospital, or ceased to be objects for our observation. We have, in most cases, personally seen and examined each individual patient once in every three weeks during the time of his treatment, and we have further regarded it as an important duty incumbent upon us to obtain, as far as was practicable, reliable information as to the condition of the patients after they had left the hospital."

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Here follow the records of observation in detail, and also a comparison with those resulting from a series of experiments simultaneously conducted by Dr. Hjort, upon the derivative plan of treatment. The committee concludes its report in the following words:—

"Taking into consideration all the above-mentioned facts, the committee arrives at this conclusion: That syphilization is a better method of treating the syphilitic disease than that of derivation, and, although it cannot positively assert that the former mode of treatment is in all cases curative, yet, all the members composing the committee fully agree in this opinion, that they are not aware of any mode of treatment in secondary syphilis which will accomplish

more, or equally as much, as will be accomplished by syphilization, applied to persons who have not previously been subjected to treatment including preparations containing mercury.

"The committee having now completed its labours, cannot omit to render to Prof. W. Boeck the highest acknowledgment for the great skill and energy which he has evinced in the investigation as to the nature and treatment of syphilitic diseases."

Relapses.—Admitting the immediate effect of syphilization, the important question remains as to the protection afforded for the future. As we shall see hereafter, this mode of treatment is attended with many drawbacks, to which the only possible palliation can be, a greater amount of security against relapses, and especially against the late distressing and dangerous manifestations of the disease. It is here that the advocates of "syphilization" believe they find their strongest argument. *Prof. Boeck claims that the relapses after this treatment do not exceed twelve to fourteen per cent.*, and he supports his statement by the statistics of "over twelve hundred cases" occurring in his own practice. At a meeting of the Medico-Chirurgical Society of London, shortly after Prof. Boeck's visit to that city, Mr. Lee stated that Dr. Owre, of Christiania, had given him statistics with regard to the relapses after "syphilization," less favourable than the one furnished by Prof. Boeck; that Prof. B. made out the percentage as 12–13, while Dr. O. found it to be 15. This charge was certainly too trivial and puerile to deserve notice!

After the mercurial treatment of syphilis, Prof. Boeck estimates that the ratio of relapses averages about thirty to forty per cent., and I doubt whether any surgeon, who has an extensive venereal practice, will regard this statement as overdrawn; provided no cases be taken into the account in which secondary symptoms have not already made their appearance, and the cases are seen in the early stage of the same period of the disease.

Having seen so few cases of "syphilization," and these also so recently, I cannot, of course, express any opinion upon this point, derived from my own observation. Nor is this difficulty likely to be removed in the future, since, in a large city like this, it is only by chance if a patient can be traced after leaving one of our large hospitals. The same difficulty will exist in other places containing a large population, even supposing the interest in medicine to be sufficient to lead to a trial of this novel treatment, requiring, as it does, a more thorough acquaintance with venereal diseases than most physicians possess.

Prof. Boeck has spoken to me of the superior advantages possessed in a sparsely populated country like Norway to trace the origin, progress, and result of disease. The police regulations with regard to prostitution are equally strict as in Paris. The names of all the patients who have been treated by him in public practice are published in full, and the profession in general throughout the country is requested, in the interest of science, to send information to headquarters if any one of these patients

applies for treatment, together with an account of his or her condition and symptoms.

Prof. Boeck's investigations as to "syphilization" have also met with severe criticism, not to say violent opposition, from some of his confrères. It is, probably, well for the cause of science that it has been so, since the observation of cases in a public hospital has thereby been rendered more exact, in a city where "syphilization" has, for years, excited greater interest in the medical profession than we, at this distance, can readily imagine.

Under these circumstances there is reason to believe, and the medical profession elsewhere has a right to expect, that the question of the permanent effect of this treatment will first be decided beyond doubt, and its merits be estimated in comparison with other means, in that city in which it has chiefly been tried, and where the advantages for observation are claimed to be so great.

It should be mentioned that the opposition excited in Christiania with regard to "syphilization" has led to an extensive trial of letting syphilitic cases alone, in other words, to what is called *an expectant plan of treatment*, and also to treatment by means of a succession of blisters, or plasters containing tartarized antimony, with the hope of proving that repeated inoculations were simply equivalent to no treatment at all, or that they acted only as derivatives; and it is claimed by a number at least of the colleagues of Prof. Boeck, that the results are nearly or quite as favourable —especially when the treatment by derivation is compared with that by syphilization.

I have before me the report of a discussion which took place on "syphilization," in the Medical Society of Christiania, at one of its sessions of 1869,[1] in which the general opinion expressed was still decidedly favourable to the method, although some of those present thought that the results were no better than those obtained by derivation.

For instance, Dr. Hjort, of the army, stated that "he had treated some cases with syphilization, and afterwards some with plasters, a method now generally known by the name of derivation; and the difference between the time required for syphilization and for derivation he thought too little to be of any moment. From the number of relapses it was also difficult to come to any conclusion as to which was to be preferred." Similar testimony was also given by others.

On the other hand, Dr. Bidenkap "still stuck to the opinion that syphilization was the best method of cure that he knew," and Prof. Voss and others made the same statement.

Theories as to the action of "Syphilization."—The early advocates of "syphilization," as Auzias-Turenne and Sperino, maintained that the

[1] Nordiskt medicinskt Archiv, 2 Hft., 1869.

syphilitic virus was absorbed from their successive inoculations, until finally the system became saturated, and refused to receive any more; further inoculations proved unsuccessful, and immunity was attained.

No authority of any note at present entertains this view of saturation, so far as I am aware, and we need not dwell upon it. Let us proceed to the opinions of the more recent advocates of the method.

I regret to say that, in the numerous conversations I have had with Prof. Boeck on this subject, his views have appeared to me vague, indefinite, and unsatisfactory; but, in justice to him, I am bound to say at the outset that he himself attaches little importance to his theories, and asks only that his facts be accepted. The opinions, however, of a man who has been the chief advocate of this method, and who has devoted many years of laborious, enthusiastic labour to its advancement, cannot be passed over in silence. I trust that, when these pages meet his eye, he will pardon the following condensed and imperfect summary of what I have gleaned in many pleasant hours of personal conversation.

Prof. Boeck says that he believes "syphilization" acts, and acts only, through the absorption of the virus inserted in the repeated inoculations.

I ask him for any proofs that absorption takes place.

Upon the first occasion of my putting this question, he adduced as an argument that the glands in the neighbourhood of the inoculations often become swollen and inflamed. This did not occur in a single instance at Charity Hospital, and, if it had, certainly no one would regard it as any evidence whatever of absorption into the general circulation!

Subsequently Prof. B. based his theory of absorption chiefly on the ground that after the inoculations had died out upon one part of the body, as the chest, the pustules resulting from inoculations afterwards commenced upon the thighs would be small.

I replied, that if this were due to the absorption of the virus, affecting the system at large, the inoculations ought not to take at all upon the thighs, as soon as they had ceased to affect the part first inoculated.

To this objection he, at the time, made no answer, but, just as these pages are going to press, Prof. B. has stated to me, as confirmatory of his view, that if, seven days after vaccination with the vaccine virus, a person be re-vaccinated in two places—upon the arm in the neighbourhood of the first inoculation, and also upon the thigh—the former will fail while the latter will succeed, although imperfectly. I have had no opportunity to put this to the test. But further—

I said to Prof. Boeck, "If you believe in absorption, you of course believe that the amount of the virus in the system is increased?"

To my surprise the answer was "No."

I inquired how it was possible that virus could constantly be added without an increase?

Prof. B. replied that he could not tell.

Now, this is a faithful summary of the conversations held by Prof. Boeck and myself upon this subject, and I submit to the reader whether or not the theory of absorption in the mind of Prof. Boeck is based upon anything more than a mere assumption.

In his published articles on "syphilization," Prof. Boeck says he believes that this process acts by "assisting nature in passing through a course which too often is but imperfectly accomplished through her forces alone."[1] This, it is needless to say, is no explanation of the *modus operandi*, although it looks very much like a belief in depurative action, from which, however, Prof. Boeck dissents.

For my own part, I cannot believe that there is any absorption whatever of the virus employed in "syphilization." How is it possible that syphilitic symptoms should vanish under the constant increase of the very cause to which they owe their existence? There is certainly no other known instance in pathology in which the addition to the system of a larger quantity of a virus producing a certain disease will cause the symptoms of that disease to abate.

Let us inquire also into the nature of the pustules and ulcerations produced by the inoculations. It makes no difference whence the virus was taken, the phenomena attending the success of these inoculations are always the same. *Pustules* appear in the course of forty-eight hours, or, in other words, *without incubation.* These pustules cover ulcers, with *sharply-cut edges*, a *purulent* secretion, and a *soft base.* The *secretion of these sores is readily auto-inoculable*, reproducing their like over and over again. Surely these are the characteristics of an affection which we call a "chancroid," and which we daily see in many persons, without the latter ever showing any evidence of the absorption of a virus.

But a more severe and a decisive test remains to be applied. If the virus employed in the "syphilization" of syphilitic subjects is absorbed, this same virus when inoculated upon a person who has never had syphilis, will even more readily enter the general circulation and produce its characteristic effects; since it is admitted by every one that one infection is a decided obstacle to a second.

Cases in which this test can be applied must necessarily be rare, since persons who have never had syphilis will seldom consent, and will seldom be subjected by others, to inoculations of this kind; instances, however, are not wanting, and, for the present, I shall confine myself to those furnished by the advocates of "syphilization" itself, or by those who have had the best opportunity to observe this process.

Danielssen, of Christiania, thought it might be possible by means of "syphilization" to effect such a change in the system of the miserable lepers of Norway, who are incurable by any other known means, that their

[1] American Journ. of Syphilography and Dermatology, vol. i. p. 14.

condition might at least be relieved. For this purpose he selected six, who had never been infected with syphilis, and subjected them to successive inoculations of the same virus which is used in "syphilization" and which is supposed to act in consequence of its absorption. It would naturally be supposed that whether these lepers derived any benefit or not as regards their leprosy, they would at least have contracted syphilis. Not at all! No symptoms of this disease ever appeared in them, with one exception, and this was the case of an individual who had already passed through nearly four hundred inoculations with impunity, when fresh matter chanced to be taken directly from a true chancre. His previous four hundred inoculations proved no protection against syphilis, and the insertion of this virus was followed by a chancre and secondary symptoms.[1]

But I am indebted to the kindness of Prof. Boeck for three other similar cases, which possess special value coming from this source. The cases occurred in the wards of Dr. Gjör, of Christiania, who gave a succinct account of them in a letter to his friend Prof. Boeck, a translation of which, made by Prof. B. himself, is now before me. Since the cases are similar, an abstract will serve for all.

Dr. Gjör, as already mentioned, had succeeded after much difficulty in inoculating the secretion of mucous patches upon the persons bearing them, and, with matter thus obtained, was carrying on the process of "syphilization" in his wards. Under these circumstances, there could be no question that the virus originated in a syphilitic and not a chancroidal lesion. It so happened that there were three women, inmates of the ward, in which these inoculations were going on, who had never had syphilis and who were there for other and simple diseases. But imagining that if syphilization was good for others it would also be good for them, these three women, without the consent or knowledge of Dr. Gjör, inoculated themselves with the matter described taken from the other patients. The inoculations were successful so far as producing *pustules*, but no one of these three patients afterwards showed any symptoms of general syphilis, although kept under observation from six to eighteen months! No stronger evidence than this is necessary to prove that the virus inserted in the inoculations of "syphilization" is not absorbed.

Other views have been maintained on this subject. Some assert that "syphilization" is after all mere expectant treatment, and that the symptoms diminish and disappear under good diet and attention to the general health, in the same manner, whether inoculations are employed or not. From my own observations at Charity Hospital I am convinced that this is not the case. All of the cases there, in which mercury had not been used, certainly exhibited more marked improvement than would have occurred under mere hygienic measures.

[1] Medico-Chirurgical Review, Jan. 1859, p. 98.

Another and more probable view is that "syphilization" has only an eliminative or depurative action. That agents of this kind do have a favourable effect in the control of syphilitic symptoms is a fact which has long been known, and such remedies enter in as important parts of a number of the older methods of treatment, as the sweating process which has been so much resorted to in Germany, the baths and large potations of water at various mineral springs, etc. More recently, also, since this subject has attracted attention, extensive trials of derivation have been made in Christiania and elsewhere by means of a succession of blisters, plasters containing tartarized antimony, etc., and the results attained by such treatment are claimed by many to be as favourable as those from "syphilization."

Without regarding the question as fully settled, my own opinion is decidedly inclined to this view, that "syphilization" acts only through the process of suppuration that it sets up, and that the immunity which is obtained is simply in accordance with the general law, that the skin will finally cease for a time to react under the repeated applications of any class of irritants.

Certain pathological points of very great interest are involved in this subject of "syphilization," but cannot now receive more than a passing notice.

The first that I would mention is the fact that the susceptibility to the action of the chancroidal virus varies in different persons, and also in the same person at different times.

As an example of the variation in different individuals, we have the small number of successful inoculations in the case of Moses Foult, above reported, compared with any of the other patients.

With reference to the variation in the same individuals at different times, my observation of the cases at Charity Hospital fully confirms Prof. Boeck's statement, that the intervention of any acute disease will for the time interfere with or entirely prevent the success of the inoculations. We had one very interesting case of this kind on the Island, at the Smallpox Hospital. The patient had been going through the process of "syphilization" at the German Hospital of this city, when he was attacked with variola, and was removed to Blackwell's Island. During the height of his intercurrent attack, all inoculations failed, but succeeded again as he began to improve.

It is not necessary for me to refer again to the failure of the inoculations made with one kind of matter, after a certain number have already been performed, and to the less perfect success of the subsequent introduction of a similar matter. As before intimated, this fact is not as novel as it might at first appear.

But there is a still more interesting question involved in the present subject: I refer to the alleged successful auto-inoculations of the secretion of true chancres, the artificial production in this manner of pustules and

ulcers, which in their symptoms, course, and termination, fulfil all the conditions which we daily regard as sufficient to establish the existence of chancroids. I hope to consider this subject in a future paper, and can only say at present that if the facts as stated shall be confirmed by further observation and experiment, the theory of M. Clerc will be proved, viz: that the chancroid is a derivative of syphilis, due to the modification of the virus in consequence of being implanted upon a subject already infected. *Practically*, M. Clerc is a dualist, for although he admits the *possibility* of a chancroid reverting to syphilis, yet he states that he has never met with such an occurrence in his clinical experience. So that if his views, advanced, with very imperfect evidence, in 1854, about two years after the publication of Bassereau's work, should, strange to say, be found at this late day to be correct, the rules now recognized in the diagnosis, prognosis, and treatment of venereal diseases will remain unchanged.

Is "Syphilization" to be recommended for general adoption?—In the preceding pages I have said much in favour of this method of treatment, and I have endeavoured to give it its full credit. From what I have personally witnessed, and from the accounts of others, I believe that it is a very effective method for the treatment of syphilis. I cannot say that I am fully convinced of the very small number of relapses after "syphilization" alleged by its advocates; not that I for a moment doubt their honesty, but results so favourable as this should be confirmed by others less enthusiastic, and less interested, before demanding implicit belief. Should further examination and experiment show that only twelve or fourteen persons out of every hundred infected with syphilis and treated by repeated inoculations, ever exhibit any return of the disease, this method will have established very high claims in the treatment of syphilis, whenever circumstances will permit its being carried out, as it may be in our hospitals and other eleemosynary institutions.

But, judging from what I have seen of the practice, nothing less than a very strong probability, in case I myself had syphilis, that the disease, if left alone, or if treated by mercury, would terminate disastrously, could induce me to undergo the personal discomfort, and for the length of time, which I have witnessed in the patients at Charity Hospital.

This *debit* side of the account, I cannot believe, is fully appreciated by the advocates of "syphilization" in their enthusiasm for the *credit*. The former, in fact, is apparently not regarded by them as deserving of mention. Upon inquiry of Prof. Boeck, I am told that this plan of treatment is usually carried on without any interference with the patient's ordinary avocations; that the inconvenience is even so slight, that a husband or a wife who has gone astray and contracted syphilis, may undergo this series of repeated inoculations extending over a period of three or four months,

and yet be able to pass off the resulting pustules and ulcerations, covering the chest, arms, and thighs, as common "boils!"

What I have seen of "syphilization," as practised by Prof. Boeck himself, would make it appear a less agreeable process than the above statement would imply. To be sure, the treatment was new at Charity Hospital, and the patients were probably aware of the fact and more or less suspicious. Yet they kept their beds during the greater part of the three or four months that the inoculations were going on, although they had every inducement to be up and out upon the grounds; and it often required all our powers of persuasion to lead them to consent to a continuance of the inoculations, so great was their discontent. Indeed, I never made a visit to the hospital without the fear that some of them had eloped, as actually happened in three instances. They represented that the soreness of the ulcerations was so great that they could scarcely endure the contact of the bedclothes, much less that of their daily dress, and the appearance of the sores corroborated their statement. I cannot well imagine how persons in their condition could have been about attending to their daily business. When they left the hospital they bore scars over the chest, arms, and thighs, which they will doubtless carry with them to their graves. Moreover, the serious tendency of an ulcer upon the thigh, in the case of Benner, to take on phagedenic action, shows that this practice is not devoid of danger. In short, I feel obliged to subscribe to the opinion expressed by Messrs. Lane and Gascoyen, that "syphilization is not a treatment which can be recommended for adoption."

ART. II.—*Orbital Aneurismal Disease, and Protrusion of the Eyeball from Venous Obstruction; with Remarks and Cases.* By THOMAS GEORGE MORTON, M. D., one of the Surgeons to the Pennsylvania Hospital, and Wills Ophthalmic Hospital, Philadelphia. Read before the Ophthalmological Society of Philadelphia, March, 1870. (With three wood-cuts.)

IN December, 1864, I ligated the common carotid for aneurism involving the right ophthalmic artery; and reported the case in a paper on Orbital Aneurisms published in this Journal for April, 1865, together with the statistics of the operations upon the carotid for this disease. Four cases of vascular disease of the orbit have since come under my notice, illustrating several varieties of orbital aneurism and vascular exophthalmos. In two of the cases the origin of the affection was traumatic, and in the other two anastomotic and congenital. The histories of these, with a brief review of my first case, now five years since the operation, and a few re-

marks upon the diagnosis and classification of these rare and interesting diseases may appear not unworthy of the attention of the Society.

It is well known that difficulties have arisen in effecting a diagnosis in regard to the nature of pulsating exophthalmia; and that errors have occurred after most carefully conducted examinations, and apparently convincing proofs of the disease being purely aneurismal. In Mr. Bowman's case the carotid was ligated for supposed aneurism of the orbit: death occurred on the eighteenth day. The arteries were found to be normal; while the ophthalmic vein, where it entered the cavernous sinus, was filled with a coagula. Mr. Hulke, in reporting the case, remarks:—

"The internal carotid may have been partially compressed by the swollen walls of the cavernous sinus against the side of the body of the sphenoid bone, giving rise to the bruit. The plugging of the trunk of the ophthalmic vein . . . . accounts for the protrusion of the eyeball, and perhaps also for the pulsation, ... because each diastole of the ophthalmic artery must have been attended by a general momentary increase of the whole quantity of blood in the orbit, because its exit through the ophthalmic vein was cut off, and the resisting bony walls of the orbit could permit a distension in front only."—*Soelberg Wells*, p. 642, Philadelphia, 1869.

Mr. Travers' case[1] in 1809, described as "aneurism by anastomosis," is the first reported instance of aneurism of the orbit. It was probably a true aneurism, or a diffuse one following upon rupture of the former. Next is Mr. Dalrymple's[2] in 1813, which was very similar to Mr. Travers'; and this is also described as an "aneurism by anastomosis." Mr. Scott's[3] case, in 1834, was traumatic. The patient, a lad twelve years of age, fell into a ship's hold, striking his head; symptoms of concussion supervened, with extravasation of blood in the orbit and protrusion. The aperture in the vessel which permitted the blood to escape probably did not close, as further protrusion followed, with pulsation; the carotid was then tied with success. In 1829 Dr. Warren performed two similar operations, one with success, for aneurism of the orbit. Then Mr. Busk,[4] in 1839, describes a case of aneurismal tumour of the orbit, following injury; and believes that the cases of Travers and Dalrymple must have been instances of *true* aneurism. Dr. Dudley,[5] of Lexington, Ky., in 1839, tied the carotid successfully for true aneurism of the orbit. The operations of Jobert, Velpeau, Herpin, Petrequin, and Nunnelly follow; while successful cases of ligature in infants for congenital aneurismal disease of the orbit, anastomotic in character, are reported by Wood, Mott, and Walton. Van Buren, Curling, Syme, Bell, Buck, Lawrence, Hart, Nunnelly, Halstead, and Foot have each operated upon aneurisms of the orbit, or upon pulsating exophthalmia. In the last case that was reported by Williams, in 1867, Dr. Foot tied both carotids at intervals of thirty days for the relief of pulsating exophthalmia, and with perfect success. Mr. Nunnelly

[1] Med.-Chir. Trans., vol. ii. p. 1.
[2] Ibid., vol. vi. p. 111.
[3] Ibid., vol. xxii. p. 134.
[4] Ibid., vol. xxii. p. 124.
[5] Ibid., vol. xxxvii. p. 221.

has reported no less than seven cases of orbital disease of a vascular nature, and he has proposed the term "*Vascular Protrusion.*" Two of these were traumatic, four spontaneous, and one due to cancer in the orbit, and cavernous sinus. Mr. Nunnelly believes that "in a great majority of such cases of protrusion of the eyeball there is no disease whatever in the orbit; the seat of it is most commonly intra-cranial. The protrusion of the eyeball is passive, and the other distressing symptoms are secondary, depending upon obstruction to the return of blood through the ophthalmic vein."[1] In the post-mortem examination in Mr. Guthrie's case,[2] which terminated fatally without operation, with symptoms similar to those of Travers and Dalrymple, *true* aneurisms the size of a large nut were found upon *each* ophthalmic artery; no distinct tumour could be felt in the orbit although the eye protruded almost beyond that cavity, with the hissing noise; vision was scarcely affected; the vena ophthalmica cerebralis was greatly enlarged and obstructed near where it passes through the foramen lacerum orbitale superius.

True aneurism of the ophthalmic artery might at first produce only slight exophthalmos with bruit and pulsation, and with no very serious symptoms for perhaps a considerable period; yet with rapid growth or rupture of the sac, or if associated with venous obstruction, as probably would be the case, excessive protrusion, such as has been frequently described, would undoubtedly occur. Exophthalmos in some cases is doubtless due to the presence of the aneurismal tumour in the orbit, while in many cases the disease is post-orbital, as Mr. Nunnelly has stated, and the protrusion directly owing to venous obstruction. Case V. presents an interesting illustration of marked exophthalmos in each eye, but from different causes. Traumatic aneurismal disease is present in the right orbit with a comparatively slight protrusion; while excessive exophthalmos in the left eye is due simply to venous obstruction; pressure on the right carotid controlling the whirr and protrusion in the former, but pressure on the left side producing no effect upon either globe.

In true aneurism of the ophthalmic artery the bruit appears more prominent and positive during the diastole, with a momentary intermission; while in the cases of aneurism by anastomosis, which I have observed, the sound is continuous and vibratory, being of continued whirring character, although increased during diastole, occasionally quite feeble, and then resembles the sound produced when a large shell is held close to the ear.

Intra-cranial aneurisms, if situated near the sella-turcica would, as has been previously described, produce a bruit, and give rise to orbital protrusion from obstructing venous circulation.

Exophthalmos with bruit, and pulsation to a greater or less extent, may arise from several causes; while protrusion without the bruit may occur, as

[1] Med.-Chir. Trans., vol. xlviii. p. 30.
[2] Guthrie, Operative Surgery of the Eye, 2d ed.

has long been recognized, simply from any cause interfering with the venous current. We may have vascular exophthalmos from—

1. True aneurisms of the orbit.
2. Diffuse aneurisms of the orbit.
3. Aneurisms by anastomosis.
4. Obstructed venous circulation, intra or post-orbital.

1. True aneurisms of the ophthalmic artery in the orbit may, according to the size of the tumour, produce exophthalmos, pulsation, and bruit; while the presence of the aneurismal tumour may possibly be detected by the finger. With advance of the growth, come œdema, great protrusion of globe, pain, etc.; the pulsation and bruit being controlled by pressure on the carotid.

2. Diffuse aneurisms of the orbit, traumatic or consecutive, in which all the coats of the vessel, or the sac of a previous aneurism may have ruptured; or where the cellular tissue alone forms the sac. Symptoms are sudden: the patient often states having heard the report of a pistol or gun, immediately followed by an intense aneurismal whirr, thrill, and bruit, and pulsation of the globe, the protrusion gradually increasing. The whirr is synchronous with the diastole of the heart, with the momentary interruption. Gradual impairment of vision follows, and with the increase of the protrusion, loss of vision, and sloughing of the globe, and frequently intense pain. Pressure on the carotid controlling the bruit.

3. Aneurism by anastomosis.—In these cases the disease is generally congenital; and the orbit is often secondarily involved from the disease creeping in from integumentary nævi. The venous capillaries and trunks are affected by the extension of the disease, and the arterial network is also highly and morbidly developed. The face and scalp are so prone to this disease that we find more examples of this affection in these parts than all the rest of the body together; so that it is not surprising for the disease to involve the loose orbital tissues. Case III. (see Fig. 2) presents an unusually marked example of this disease, not only involving the orbit but the entire side of the face, and including the lower jaw and tongue; the protruded globe being forced outwards and downwards, and projected at least an inch. This affection may be limited to the orbit, and we should then have exophthalmos with or without pulsation and thrill, excessive or not, according to the development of the disease; but the latter symptom is *continuous* in character, and generally much less marked than in the two preceding forms. If there is an ill-defined tumour of varicose vessels this may be compressed and nearly emptied, filling up when pressure is removed. The disease advances gradually and often appears stationary after having attained considerable size: there is seldom pain, the patient being able to continue with ordinary work, and not experiencing any excessive cephalic noise. In case of free

communication with vessels from the opposite side, or when the growth advances from the orbit, a marked thrill is the result.

4. *a.* Vascular protrusion from venous obstruction.

b. Exophthalmos with bruit and pulsation; Graves's disease.

In the former the protrusion is due to distension of the orbital vessels from blocking up of the ophthalmic vein previous to its opening into the cavernous sinus, or to aneurism of the ophthalmic artery at its origin, or from any cause whereby the venous flow from the orbit is interfered with by tumour or otherwise. When the vein is obstructed, pressure being exerted upon the artery by the hardened vein, a bruit may be produced. In cases of aneurism of the ophthalmic artery previous to its entering the orbit, we would have symptoms of true aneurism; but the protrusion would be passive from the obstruction of the venous circulation, yet the bruit would be, as above stated, as it is found in true aneurism. In vascular protrusion the vision is often more or less impaired, while occasionally after duration of years, vision has not been greatly interfered with or even destroyed. Venous dilatation alone forming a tumour in the orbital cavity may produce exophthalmos without bruit. An interesting case of this disease of several years' duration, is reported by Dr. De Ricci,[1] in which great protrusion occurred. In this case the globe was finally removed by Dr. Bowman to reach the tumour, which was then found to be composed of a mass of convolutions of veins dilated into sacculi.

Dr. Parrish, one of the former surgeons of the Wills Hospital, has also reported a case[2] of traumatic vascular tumour of the orbit, *without pulsation or bruit*, in which an attempt was made to remove the growth by ligature; after three ineffectual efforts the treatment was abandoned, and at the last report the disease was progressing. It was thought in this case that the arteries and veins were alike involved. In Graves's disease or exophthalmic goitre, for instance, we may have protrusion of the eyeballs to such an extent that the lids cannot, by any effort of the patient, be brought together over the cornea, which may lose its transparency; and vision, being consequently lost or greatly impaired, the eyeballs may finally become atrophic. Anæmia, with violent action of the heart, and gastric symptoms, usually accompany the bronchocele and exophthalmos. There is also a peculiar puffy condition of the eyelids similar to that observed after the administration of arsenic; and in the bronchocele there is frequently observed a distinct diastolic murmur. About a year ago I had under care a lady with this form of exophthalmos, excessive in character and associated with anæmia and bellows murmur, but no bronchocele; the globes were almost dislocated; the patient was presbyopic, but had no other difficulty with vision; only slight improvement followed the administration of tonics and stimulants. In Graves's disease "the exophthalmos

[1] Dublin Quart. Journal, 1865, Nov. p. 338.

[2] American Journal of Medical Sciences, p. 357, October, 1841.

is due to hypertrophy of the adipose cellular tissue of the orbit, and to a hyperæmic swelling of this tissue."

"It was supposed by some authors that the pressure of the enlarged thyroid upon the cervical bloodvessels caused the protrusion of the eye. In opposition to this view it may, however, be urged that we often meet with very large bronchoceles, without any exophthalmos, and, on the other hand, as has been shown by Prael, the latter may exist without any enlargement of the thyroid gland. . . . . It is, however, far more probable that the affection is due to an irritation or neurosis of the sympathetic nerve, producing hypertrophy of the adipose tissue of the orbit and dilatation of the veins."—*Wells*, p. 621.

The involvement of the orbit by aneurismal tumours, true, false, or diffuse (spontaneous or traumatic), has been frequently observed; and for these the term aneurismal appears correct; while venous obstruction alone in many cases is the true cause of exophthalmos.

Treatment.—As but little can be expected from the internal administration of remedies, our attention must be directed either to the orbit or to the arrest of the circulation by pressure or ligation of the main artery in the neck. Electro-puncture was unsuccessfully tried by Petrequin in 1845. Injection of coagulating fluids into the orbital tumour has been followed by success in many cases; but it appears to be a dangerous operation unless the sac can be readily and certainly punctured.

Dr. H. D. Noyes, of New York,[1] reports six cases of cure. The injections consisted, in two instances of tannin; in one, of the acetate of iron; in three, of the sesquichloride of iron.

Compression of the carotid has been tried in very many cases, and several successful results of this treatment have been recorded, with, however, a preponderance of failures.

Gioppe, in 1856, employed compression intermittingly applied for four days with a complete success; he was followed by Scarramuzza in 1858, who used pressure for eighteen days intermittingly (7 hours and 20 minutes) with a like result; and again by Freeman in Canada. Five cases, three in England, one in France, and one in Poland, have since failed. In a recent case of pulsating exophthalmos with bruit, at the Wills Hospital, pressure was abandoned, after a most faithful trial. A large number of aneurisms and varices of the orbit have been subjected to ligation of the carotid, the success attendant upon this operation having been quite unusual. When there is danger of the eye being compromised, or even without this, when the disease is increasing, and compression has failed, ligation should be resorted to.

In excessive hypertrophy, with great protrusion, as in Case III., although not advancing, where there is great danger of immediate increase and possible hemorrhage, the carotid should be ligated. Even in suspected malignant disease, with exophthalmos, bruit, pain, disturbed vision, and rapid growth, ligation would be quite justifiable if not demanded. The disease

[1] New York Medical Journal, March, 1869.

would probably be temporarily arrested, and pain would be alleviated by the diminished congestion.

Of the 32 cases of all forms of orbital aneurism which I collated in 1865, 30 were subjected to ligation of the carotid artery. Three of these were partially successful, two were unsuccessful, three died, 22 were cured.

Dr. Noyes has tabulated in the *New York Medical Journal*, March, 1869, 45 cases of carotid ligation from all sources; of this number, three were partially successful, five were failures, five were followed by death, 32 were cured, showing equally fair results.

CASE I. *True Aneurism of the Ophthalmic Artery successfully treated by tying the Common Trunk of the Right Carotid.*—This operation was performed upon the patient before you (Mrs. P.) on the 4th of December, 1864. The earliest symptom of the aneurismal disease was observed during the month of May of the same year, when she was two months pregnant; her attention then was directed to a slight noise in the right temple, which gradually increased. In the early part of November, just before her confinement, she awoke in a fright from a sound sleep with what she supposed to be the report of a pistol; but was assured by her sister, who was with her at the time, that it was only a dream; from this time the noise became much more marked and distressing in character. The eye now began to protrude, the vessels about the orbit became prominent, and vision was somewhat involved. Some weeks after delivery, which was accomplished without any difficulty, I was consulted; the protrusion was very marked, and pulsation of the globe had become a very prominent symptom; the globe was pushed upwards and forwards; pupil dilated; convergent squint and double images; vision impaired; the vessels adjacent to the orbit were enormously distended and pulsated strongly. The thrill was distinctly aneurismal in character, with the momentary intermission, being similar to the puffing of a locomotive, to which the patient herself compared the noise. True aneurism of the ophthalmic artery in the orbit was diagnosticated, this being concurred in by my colleagues of the Pennsylvania Hospital, and others who saw the case. The carotid having been tied the ligature dropped on the 17th day; the wound closed up firmly, and on the 24th day vision was normal and all evidences of the original disease had vanished.

The patient has ever since continued well; there is no impairment of vision, and the fundus of each eye, is found to be normal. The patient has been again confined, in December, 1867, without experiencing any difficulty either prior to or after delivery. The right side of the patient's face is observed to be decidedly less full than the left; the tissues are apparently less nourished, and a slight atrophic state has resulted. Upon the left side of the face free perspiration occurs, while the right side exhibits quite the contrary condition.

The patient was exhibited to the society.

All the symptoms of true aneurismal disease were present in this case; and had ligation of the artery been delayed, the same excessive exophthalmos, with symptoms described in first recorded cases, would have undoubtedly occurred.

CASE II. *Aneurism following a Blow upon the Brow; Orbital Tumour, Exophthalmos, Pulsation, and Bruit.*—J. L., æt. 25, native of Ireland, has been in this country since June last (1869), has always been healthy. Four years ago he received a blow with the end of a loaded whip, directly over the left eye; considerable ecchymosis resulted, the tissues in and about the orbit being much infiltrated; a month afterwards this infiltration had very much disappeared and no further trouble was experienced for some twelve months afterwards, when a slight swelling or lump appeared which could be grasped by the fingers. This tumour was soft and compressible; the growth advanced slowly during the next two years, the eye being gradually displaced downwards and outwards.

During the past year the growth has increased rapidly, having doubled in size within the last six months; he has also experienced for a long time a slight hissing or purring noise, more at night when lying in bed, or when at work in a stooping posture.

Vision has been gradually diminishing ever since the tumour began to develop, and the eye has been almost hidden from view.

Present Condition.—Exophthalmos strongly marked; a tumour above the eye extending backwards, soft, compressible; with some effort the globe can be forced partly within the orbit, the tumour diminishing, and with the removal of the pressure the growth slowly regains its size. There is a slight pulsation, with a feeble *bruit.* Pressure on the carotid does not entirely control the *whirr.* Left eye is projected forward and downward

Fig. 1.

one inch; the globe above is flattened horizontally; the lower border of right iris is on a level with upper border of left; pupil active; external ciliary vessels engorged, especially over the lower and outer section.

Ophthalmoscopic Examination.—In the left eye the arteries are exceedingly minute; veins full and dilated; disk atrophied, and irregular; fundus pale. Right eye, fundus pale; disk slightly irregular; normal vision.

Left or diseased eye, $V = \frac{1}{100}$. Right eye, normal acuity of vision. Left side, bruit heard most distinctly over globe, and also slightly over globe of right side by transmission. Left eye projects forward with each pulsation.

In this case some of the vessels of the orbit were ruptured, which accounted for the sudden and excessive effusion; absorption then occurred; the vessel or vessels, arterial and venous, which were ruptured, became dilated, and an aneurism by anastomosis has gradually developed; with slight bruit, pulsation, and thrill, forming a compressible, varicose tumour. In regard to operative interference, a partial removal of the tumour with the knife, and ligation of its deeper portion would probably be sufficient.

The patient was exhibited to the Society. Fig. 1.

CASE III. *Aneurism by Anastomosis, with Orbital Tumour; Involvement of the Entire Side of Head and Face by the Extension of the Disease.*—L. L., æt. 25, married, general health good. Soon after birth, the left side of his face was observed to be rather more fully developed than the right; as far back as he can remember the left eye has been prominent. Many years ago he noticed a rushing sound in his head and eye, which is more intense at times, the protrusion and noise being increased by heavy work or the stooping posture.

Present Condition.—The right eye is normal as regards vision and position. The left presents excessive exophthalmos; the conjunctiva is chemosed, highly vascular, and thrown into folds; the upper part of the cornea being on a line with the lower edge of the cornea of the sound eye

Fig. 2.

Intense pulsation and marked thrill are perceptible to the touch on the temple and eyeball, and the noise can be heard at some distance from the patient's head. A considerable tumour, irregular in shape, flattened above, can be felt deeply in the orbit and at the inner angle of the eye;

in this tumour the thrill is very marked and intense in character. The orbital portion of the tumour is globular, readily compressible, but with removal of constriction filling up instantly. Pressure applied to the carotid entirely controls the aneurismal thrill, quickly produces a marked diminution in the size of the tumour, and stops all pulsation. Left eye can count fingers with great difficulty at about one foot; all movement of this eyeball is lost; a marked continuous bruit can be traced in the vessels of the face, while the left side of the tongue is enormously hypertrophied; this varicose aneurismal condition invades the entire side of the head; the mucous membrane of the tongue and mouth is thrown into folds, while the opposite side is quite normal.

Pressure upon the left carotid controls all bruit and thrill with immediate lessening of the orbital tumour and exophthalmos. Ligation of that vessel has been advised as the affection is increasing, and the risks of hemorrhage are considerable.

The patient was exhibited to the Society. Fig. 2.

CASE IV. *Aneurism by Anastomosis involving the Orbit at the Inner Angle.*—Miss P., æt. 12 years, although otherwise a healthy girl, has had a tumour growing gradually since infancy at the inner side of the right orbit. More recently it has been projecting beyond the angle, and forming a growth a little more than an inch in diameter. It is larger at times and more prominent under excitement. The pulsation is slight in the tumour, and sometimes can scarcely be felt. The child says she feels or hears a sound in her head all the time. The tumour can be forced by pressure almost away, after which it gradually refills; the exertion of going up stairs produces great prominence. The eye is not displaced nor is vision interfered with.

This case (photograph shown) is one of anastomotic aneurism. The slight pulsation, the subsidence of the tumour under pressure, the continued noise in the head, the absence of all very active symptoms, and the slow growth, with its congenital character, all indicate the nature of the affection. In this case, unless the disease is arrested in its early growing stage, there is every probability of its assuming a more serious character. Injections of coagulating fluid, excision of the tumour, or ligature, would probably prove successful.

CASE V. *Traumatic Aneurism of the Right Orbit, associated with extreme Exophthalmos of the Left Eyeball, from Venous Obstruction.*—S. G., æt. 25, received a violent blow on the right side of the head, on the 20th of June, 1868. Immediate protrusion of the right eyeball followed, and the left became prominent eight weeks afterwards. A hissing sound was noticed in the right orbit, directly after the accident, perceptible only with each stroke of the pulse. When admitted into the Wills Hospital in August, 1869, both eyes presented exophthalmos (see Figure 3). The left globe was almost dislocated, but could be easily pressed back into the orbit, and readily held there; but when pressure was removed it immediately bulged out, but presented neither pulsation nor the slightest bruit.

The right eye pulsated strongly, and resisted pressure; there were intense thrill and bruit which could be controlled by pressure on the carotid of the same side, and under this pressure the globe could be placed almost in its normal position. Pressure on the left carotid produced no effect on either eye.

The case was diagnosticated as aneurism of right orbit, with vascular pro-

trusion of the left, simply from venous obstruction, being thus an illustration of two forms of exophthalmos. Compression of the right carotid

Fig. 3.

allowed the globe on that side to be replaced to a considerable extent, thus favouring the view that an intra-orbital tumour existed, which was partially, or entirely emptied, along with the cessation of all the aneurismal symptoms, when the arterial circulation was controlled.

Complete notes of this case, of which a mere abstract has been here given, were read before the Society. The detailed history will be found in the present number of the Journal in the report by Dr. Harlan, who had charge of the patient, and to whose paper the reader is referred.

ART. III.—*Case of Traumatic Aneurism of Orbit, treated by Compression.* By GEORGE C. HARLAN, M.D.

S. G., æt. 25, a brakesman on Pennsylvania Railroad, was admitted to the Wills Ophthalmic Hospital on the 14th of August, 1869. On the 20th of June, 1868, while standing on the platform of a car in motion, he received a violent blow upon the head from another car moving in the opposite direction on a side track, which fractured the lower maxilla on both sides and inflicted several scalp wounds. He stated that he was partially insensible for three weeks, and that when he returned to consciousness his right eye was very prominent and swollen, and that he heard "a roaring sound like falling water in his eye" with every stroke of the pulse, which he had never been free from since. A "red tumour" which had appeared

on the right eye partly covering the pupil and interfering with vision, had been cut out by his medical attendant. A cicatrix in the conjunctiva at the inferior palpebral fold, proved the tumour to have been a chemosis. The left eye commenced to protrude in about two months.

He was able, in a few weeks after the recovery of consciousness, to resume his occupation, and had suffered no inconvenience beyond the deformity and the annoying sound which he referred very positively to the right eye.

At the time of his admission there was great exophthalmos of both eyes—greater of the left which seemed almost dislocated, the equator of the ball being in front of the edge of the orbit. The left ball could be pressed back to its proper position and easily held there without pain to the patient, but immediately bulged forward again when the pressure was removed. The right eye resisted pressure, its position could not be altered, and strong pressure gave pain. He had excellent binocular vision. In the right eye $V = \frac{20}{30}$, in the left $\frac{20}{20}$—accommodation in each $= \frac{1}{5}$. Pupils freely movable and ophthalmoscopic appearances normal. In addition to the "sound in the eye" referred to, he felt every arterial pulsation "like a little jerk all over his head," and coincidentally there was a slight apparent motion of any object that he looked at steadily. On auscultation, a loud aneurismal murmur could be heard over any part of the head or face, most distinctly over the right temple. This murmur, as well as the sound heard by the patient, was entirely stopped by pressure upon the right carotid, and there was perceptible pulsation of the right ball, with slight darting pain, when the pressure was suddenly removed; never any pulsation of the left ball. During the pressure on the artery the right ball could be pressed back. No effort was produced upon either eye by pressure upon the left carotid, or upon the left eye by pressure upon either artery.

On consultation of the surgeons of the hospital, it was decided to give a thorough trial to treatment by compression of the carotid, as the pulse was full and strong, and excited by prolonged examinations and the prospect of surgical treatment—beating at the rate of nearly 100 per minute—tinct. veratrum viride was given several hours before compression was commenced, and repeated at intervals. The resident surgeon, Dr. James C. Wilson, assisted by Mr. Landis, an advanced student of medicine, and the patient himself, who was an intelligent man of unusual endurance and indomitable perseverance, kept up continuous and complete compression from 3 P.M. until 11 P.M.—a period of eight hours—the pulse ranging in the mean time, under the influence of the veratria, from 44 to 56.

The murmur though still perfectly distinct, was much lower in tone and altered in character. The patient stated that the "roaring sensation was fainter and had a shriller sound. After this, intermittent pressure was applied from four to six hours daily, principally by the patient himself, who learned to control the artery better than any one else; he accomplished it sometimes by the thumb, sometimes by a tourniquet I had made by Mr. Kolbe for the purpose, and which acted very well for an hour or two at a time, and sometimes by means of a contrivance of his own, consisting of a stick about a foot long with the end properly shaped and padded, which he pressed against the artery and held in his hands or rested against a table. The improvement in the sound continued, and the exophthalmos was decidedly diminished, particularly of the left eye, making an evident change for the better in the patient's appearance.

This treatment was continued for five weeks, during the last two of

which no progress was made. Rather for the sake of confirming the assurance that all had been done that could possibly be accomplished by pressure, than with any decided hope of further improvement, continuous pressure was tried, being kept up by relays of students for twenty-four hours, but with scarcely any effect. The patient then left the hospital, expressing himself satisfied that the degree of improvement attained fully compensated him for all he had endured. A few weeks ago he wrote to me to say that he had resumed his occupation as brakesman, and that the former condition of his eyes had returned, that he was no better than when he entered the hospital. He will probably return to undergo the operation of ligation of the carotid.

ART. IV.—*Form of Neuralgia of the Jaw-Bones, hitherto undescribed.* By S. D. GROSS, M. D., Professor of Surgery in the Jefferson Medical College of Philadelphia. (With a wood-cut.)

THERE is a form of neuralgia of the jaw-bones, which, as far as my information extends, has not hitherto been described, though, judging from the great suffering which attends it, it has doubtless been observed by other practitioners. Its seat is in the remnants of the alveolar process of edentulous persons, or in the alveolar structure, and in the overlying gum, and is met with chiefly, if not exclusively, in elderly subjects. It is also more common in the upper than in the lower jaw. The part affected is usually very small, often not exceeding a few lines in extent. The soft tissues around do not seem to suffer, at least not in the same degree, as is so frequently the case in the more ordinary forms of neuralgia of the jaws and face. On the contrary, the morbid action is generally limited to the osseous structure. In rare instances there may possibly be some involvement of the gum, which is nearly always exceedingly hard and dense, grating more or less under the knife, and adhering with extraordinary firmness to the atrophied alveolar process beneath.

The pain is generally paroxysmal, coming on in fits and starts, very much as in ordinary neuralgia, the slightest causes being sufficient to provoke it, as talking, mastication, the contact of hot or cold fluids, deglutition, or mental excitement. Sometimes it is momentary, coming and going with the rapidity of lightning; occasionally it lasts for hours together, and cases occur, although they are rare, in which it continues, with but little mitigation, for an indefinite period. The pain varies in character. Thus, it may be sharp and darting, dull, heavy, aching, boring, or gnawing. Pressure generally relieves rather than aggravates it. Now and then, when it is uncommonly severe, there may be more or less spasm of the muscles of the face, but this is rare.

The pathology of the affection seems to be compression of the minute nerves distributed through the wasted alveolar process, dependent upon the encroachment of osseous matter upon the walls of the canals in which they are naturally inclosed. In the natural state the nervous current passes along without any hindrance, but in this condition of the canals in question its transmission is interrupted, and more or less pain, known as neuralgic, is the consequence. That this explanation is true does not, I think, admit of the slightest doubt. The osseous structure, as previously stated, is always abnormally hard from the deposit of new substance which imparts to it almost an ivory-like consistence.

The disease usually comes on gradually, and proceeds from bad to worse, until, in many cases, the suffering is rendered nearly intolerable. The general health, at first unaffected, is eventually materially impaired; the appetite is deranged; the countenance wears an anxious expression; the sleep is disturbed and unrefreshing; the bowels are habitually constipated; digestion is imperfectly performed; the extremities are almost constantly cold, and there is terrible depression of spirits. Loss of sleep, fatigue, exposure to cold, irregularity of diet, mental distress, and, in short, whatever has a tendency to lower the vital powers is sure to aggravate the pain and to prolong the paroxysms. Sometimes the disease would seem to be of a malarious origin, the attacks coming on periodically very much as in intermittent fever.

The subjoined cases will serve more fully to illustrate the nature of this affection, as well as to suggest the proper treatment for its relief.

CASE I.—W. D. H., æt. 64, had all his upper teeth extracted eighteen years ago, and wore a plate with comfort for fifteen years; but three years since, previous to which time he had always enjoyed excellent health, he felt a sharp, cutting pain dart through the alveolar process of the left upper jaw, which was, however, confined to the portion posterior to the situation of the second bicuspid socket. From this date he was subject to excruciating paroxysms of pain which lasted from one to five minutes, and were always excited by movements of the mouth, as in speaking or eating. These attacks lasted for a week or ten days, when relief occurred for a similar period; but, although there were intervals of freedom from these paroxysms, yet he always experienced a dull, unpleasant pain in the affected parts, which were not, however, sensitive to the touch, nor did they present any signs of inflammation. The frequency and violence of the paroxysms were generally somewhat lessened by the exhibition of large doses of quinia.

On the 16th of September, 1869, I carried an incision along the alveolar ridge as far forwards as the second bicuspid socket, which enabled me to turn aside the soft parts, including the periosteum, and to remove, by means of the cutting pliers and the gouge, the affected bone to a level with the palatine process. There was no evidence of disease either in the bone or in the soft parts.

Mr. H. called upon me six months after the operation, from the effects

of which, as he informed me, he rapidly recovered. He has not had any severe paroxysms of pain since, and his health never was better.

CASE II.—J. McN., a labouring man, æt. 57, presented himself at the clinic of the Jefferson Medical College, September 22d, 1869, on account of neuralgia of the right upper alveolar process, which was edentulous, the teeth having been extracted forty years ago. In the autumn of 1862, while on a sea voyage, he contracted a severe cold, and suffered from his first neuralgic attack, which involved the alveolar process from its posterior limit as far forward as the situation of the first bicuspid socket. Since that time he has been the subject of intermittent paroxysms of excruciating pain, during the existence of which the mastication of the softest food, or the mere act of swallowing, was attended with an increase of the suffering, while rough handling and the mastication of the hardest articles of food could be borne with impunity during the absence of the paroxysms.

The affected parts were freely removed by an operation similar to that described in the preceding case. The gum was tuberculated and very firmly attached to the adjacent bone, which was of unusually dense consistence. Entire freedom from suffering up to the present time, April 27th, 1870, has followed the operation.

CASE III.—A lady, nearly seventy years of age, a patient of Dr. Nordman, of this city, had suffered for a number of years with severe pain of the left upper jaw, involving hardly three-quarters of an inch of the alveolar process. The cuspid and the two small grinders had been extracted long ago, the gap in the bone left by their removal being much atrophied. The paroxysms of pain were frequent and severe, and had effectually resisted a great variety of remedies employed for their relief. The health was a good deal impaired; the body was very susceptible to cold; the countenance had a woe-begone expression, and there was great mental depression. Excision of the remnant of the alveolar process put a speedy stop to the disease; and, with the aid of a mild tonic, the woman soon regained her former health.

CASE IV.—A lady, upwards of eighty years of age, had always enjoyed excellent health, with the exception of an occasional attack of asthma, and, latterly, of a severe neuralgic affection of the left upper jaw, in the situation of the three large grinders, which had been extracted upwards of fifteen years previously. The pain was generally of a dull, aching, or gnawing character, but at times it was sharp and shooting, and exceedingly distressing, having of late left her very little sleep or comfort of any kind. She was habitually peevish and fretful, and often expressed a desire to die, so great was her suffering. Some tenderness existed at the seat of the disease, but the neighbouring parts were apparently free from involvement. All the remaining teeth on that side were sound. Excision of the alveolar process was attended with a good deal of bleeding, coming on some hours after the operation, but the pain was at once relieved, and never returned.

CASE V.—A widow, æt. 33, consulted me last summer on account of a neuralgic affection of the left side of the lower jaw, under which she had laboured for upwards of three years, her sufferings having at times been extremely severe. The pain was greatest at the side of the two small and first large grinders, which had been extracted several years before on account of caries. It commonly came on in paroxysms, of variable duration, their violence being always aggravated by eating and talking, by disorder of the

menstrual function and by damp states of the atmosphere. The general health was good, but the lady was habitually nervous, and much depressed in spirits. The appetite of late had been considerably impaired. The gum at the edentulous gap was often tender to the touch; pressure with the finger usually provoked a severe fit of neuralgia. Various remedies had been fruitlessly employed. The treatment, after the case fell into my hands, was the same as in the other patients. The pain at once disappeared, and has never returned.

The first of these cases occurred upwards of ten years ago. A number of similar examples have fallen under my observation, but as they offer nothing of special interest it is unnecessary to describe them. From all that I know of this complaint, I am free to believe that the only effectual remedy is excision of the affected alveolar process. No particular attention need be bestowed upon the after-treatment. A mild course of chalybeate tonics may be required when the patient is anæmic, or affected with flatulence and indigestion.

The annexed cut affords a good illustration of a pair of forceps, made

at my suggestion by Mr. Kolbe, for the removal of the alveolar process when affected with this painful disease.

ART. V.—*On a Rare Disease of the Joints.* By SAMUEL JACKSON, M. D., Emeritus Professor of the Institutes of Medicine in the University of Pennsylvania, &c. &c.

SEVERAL cases of a rare form of disease resembling rheumatoid arthritis, if they be not uncommon examples of that affection, have fallen under my observation in the course of my practice, an account of which may prove interesting to the profession. The peculiarity of the affection, as seen in these cases, is, that it is confined to a single tissue—the ligamentous—whilst the general health of the patient is not at all disturbed. I have not been able to find any similar form of the disease described, and when in London I consulted Sir Benjamin Brodie in regard to it, who confessed that it was entirely new to him.

The first case I met with was that of a gentleman residing in this city. At the time I heard of it he had been suffering for some years, and I called to ask his permission to examine his disease, which was readily granted.

The affection was of one of the joints of the wrist and hand, all of the bones of which were dislocated; at every attempt to move the hand the joint was moved, but in no determinate direction, the members lying loose. The gentleman was dressed daily, and I was therefore unable to make a close examination, but I believe all of the joints were similarly diseased, though as it occurred soon after my graduation, I made but a superficial examination. He appeared to be in good health, was not emaciated, and his nutrition was apparently perfect. I made occasional inquiries, and found that the case was protracted for years.

The second case was that of a lady residing in the interior of this State whose wrists, when she consulted me, were dislocated at every movement. The late Prof. Horner, at my request, accompanied me in a visit to her, and after a careful examination we were both convinced that the cartilage had disappeared, and that the bones had been worn smooth by friction upon themselves. The patient attributed her sufferings to a cold contracted in sweeping snow from the piazza of her house, and had then, at the date of my first seeing her, been under treatment for over a year without deriving any benefit from it. Her disease gradually progressed for three years, when she died of a pulmonary affection.

The third case occurred in a lady of this city whom I found confined to bed, with every joint dislocated and stiffened. Her general health was unimpaired; she was entirely free from any disease save that in the joints, and she enjoyed an entire immunity from suffering except on any attempt at motion. She finally perished from a fever after having been incapable of any motion for years.

The fourth case was also that of a lady of this city, who sent for me on account of an acute pain in her wrist. The lady was of a fine constitution and a good liver, and I at first regarded the affection as gout, but from there being no alleviation resulting from the treatment which usually controls that disease for a certain time, and as the pain extended up the arm to the shoulder, and finally to the back of the neck, where it seated itself beyond the control of all the remedies employed against it, I came to the conclusion that it was another one of the cases of this form of disease, and gave up her case. The disease has continued slowly to progress until, at the present time, all of her joints are affected and she can barely move.

About October, 1853, I was called to see a married lady in a family I attended, who had just returned from their country seat. She supposed herself to be labouring under a rheumatism in the right knee, which had come on in the middle of the summer. Upon making an examination, I found that the knee was considerably enlarged, and the seat of a very severe and constant pain. I also ascertained that the right ankle was also affected in the same manner, and that the wrists were becoming stiff and painful. The patient was otherwise in excellent health. I thought I recognized it as belonging to this form of joint affection, and instituted a very active course of treatment, which appeared to retard the progress of the complaint, though it did not arrest it. Finding the case obstinate, and regarding it as a rheumatism, I advised the lady to go to Havana to spend a winter there. She also visited a spring of great repute at the southern extremity of Cuba, but without obtaining any relief. From there she went to Key West, and after her residence there, visited Charleston, where she was under treatment. She then returned to this city, where she remained till late in the year 1863, when she sailed for Brazil, whence she

returned in the following year. During all this time the disease gradually progressed, stiffening the joints until she became incapable of motion, and had to be always carried about, fed like a child, and waited upon as one incapable of any exertion, no matter how small, or of what nature. And yet her general health is perfect and has always been so; her organic functions are unimpaired, and her spirits not affected. She has been for some years in this condition without a prospect of improvement.

The sixth case presented itself in a young lady who lived here. The disease had progressed so far as to stiffen her ankle and knee-joints and prevent her walking, when I ordered the use of Penny's bath. She had not taken many when she removed to the country, and, by my advice, lived upon a milk diet. After some time she returned to the city, and, to my great surprise, was able to walk to see me, a distance of several squares from her residence. She remained free from any symptoms of this disease for three years, when she returned to the country and relapsed. I do not know her condition at this time.

When visiting a family I was requested to see the wife of a gentleman residing in Germantown, who was on a visit there. At the time she consulted me I found that the knee-joint was stiffened and enlarged, and the wrist becoming painful. The ankle-joint was also threatened. I saw at once that I could not benefit her, and, though her family were very desirous I should attend her, my health was too feeble to undergo the fatigue of visiting her at such a distance. I saw her on but that one occasion, though I understood that her disease continued to advance. She went under hydropathic treatment, which did not afford any relief, and died in a few years.

The last case was a young English lady, who was brought to my notice by one of the graduates of the course of 1863. She was then in the last stage of the disease. I saw her lying upon a couch to which she was removed from her bed every day. In lifting her, great care was taken to prevent a dislocation of the hip-joint. All of the joints of her hands were displaced. She was suffering great pain, and was so much reduced that it was evident she was approaching the termination of her sufferings. She died in about ten days after my visit. I endeavoured to obtain an inspection of some one of the joints, but the family obstinately refused.

ART. VI.—*On the Coincidence of Certain Nervous Symptoms with the Presence of an Excess of Urea in the Urine.* By F. A. BURRALL, M. D., of New York City.

IN this paper are narrated a few cases which have fallen under my own observation in which a peculiar variety of nervous symptoms was accompanied by a marked excess of urea in the urine. To these are added some extracts upon the same subject, which have as yet been imperfectly elaborated, and further, certain considerations upon the etiology and treatment of the disease.

The following case is from my note-book December 21, 1868. Having

been struck with the relation which uric acid and the urates bear to a large number of diseases, I had made notes of this and other similar cases, with a view, if possible, of grouping those affections in which a uric acid diathesis seemed to exist.

CASE I.—The patient was a middle-aged gentleman of sanguine temperament who had for some time been suffering from various disagreeable nervous symptoms, such as depression of spirits, excessive irritability, tinnitus aurium, and general malaise. His appearance was that of average health. There was an antecedent history of gout, though in a distant relative (mother's uncle), and the patient was what is termed a meat-eater. The appetite was not excessive, there was a marked tendency to acidity, and the bowels were regular. Cold bathing could not be borne; in fact the patient was very susceptible to cold, and perspired with difficulty. He suffered occasionally from pain in the lumbar region. His nervous symptoms were so severe as to render him at times very miserable. He had been in the habit, so common with many men of business in New York, of hastily drinking spirits, or malt liquor, several times during the day. This custom seems to prevail in this city partly as a habit, and partly to brace up a weary system for the excessive strain which is peculiar to the activity of business life in New York. An examination of the night and morning urine mixed, showed it to be sherry-coloured, slightly cloudy, acid, and having a specific gravity of 1030. There was no deposit on boiling. Half a drachm of pure nitric acid was placed in a watch glass with a drachm of urine, not concentrated or evaporated, when a copious deposit of nitrate of urea soon appeared. A similar change was also observed under the microscope when a drop of nitric acid was added to urine on the slide. The deposit in the watch glass gave the urine the appearance of being partially frozen. The patient was not in the habit of passing an unusual quantity of water.

The treatment was commenced by a discontinuance of stimulants and the use of the "Vichy with lithia" water. Three grains of bicarbonate of soda and a grain of ipecac were ordered to be taken at bedtime every other night, and a pill containing a grain of sulphate of quinia, one-fifth of a grain of ext. of nux vomica, and one-half of a grain of sulphate of iron, to be taken three times daily.

January 5, 1869. Patient feels much better. The deposit in the urine on a recent examination was found to be less. Ordered to stop pills and powders and continue the Vichy water. The pill was intended as a substitute for stimulants.

13*th*. Patient complained of a "swollen" feeling in his head, although his general health was improved. He stated afterwards that he derived much benefit from a pill of valerianate of quinia combined with quinoidia which I then gave him.

March 4. General health has continued to improve, disposition and spirits seem much changed, and the tinnitus has disappeared.

25*th*. A few days since patient, who had been feeling well previously, ate veal and lobster salad at dinner. He was at this time under some mental anxiety. Next day he suffered from a great pain over the sacrum and a sensation at the vertex described as a "jerking pain" which was also felt in the left eyebrow; these sensations were accompanied by intense misery, for this language is not too strong to use in describing the mental condition. On coming to my office he brought a bottle of urine passed March

23. This specimen contained a copious deposit (urates) which disappeared on boiling. At this time his visits were discontinued.

CASE II.—A merchant 45 years old had for two years been suffering from uneasy sensations in the head, resembling vertigo and described as a feeling of heat at the nape of the neck followed by a sensation as of a wave passing up on the head and producing a sense of insecurity and fear of apoplexy. His temperament was a mixture of the bilious and nervous. Tongue was furred, but although the patient had a habit of eructating he was not conscious of suffering from dyspepsia. He was a moderate eater, did not drink to excess, but occasionally took a glass of whiskey before retiring. He was easily chilled and liable to tremble or shiver when in the cold air. He slept badly, was much depressed in spirits, and feared either mental derangement or apoplexy. There had been occasional attacks of what, from his description, seemed to be muscular rheumatism. The amount of urine passed daily was from one to three pints, which was frothy when discharged. An examination of the night and morning urine mixed, showed it to be sherry-coloured, acid, with a specific gravity of 1030, and containing a thick whitish cloud which disappeared on the application of heat. The microscope revealed an abundance of urates in the form of very minute round bodies. On pouring some of the urine, which had neither been concentrated nor evaporated, into a watch-glass, and adding pure nitric acid in the proportion of one of the acid to about two of the urine, nitrate of urea soon appeared in abundance. There was no sugar visible in another specimen of the urine submitted to Trommer's test. Patient was ordered to be careful in his diet, and a mixture prescribed of bromide and iodide of potassium to be taken three times daily. It should be added that the use of stimulants was not interdicted, but a recommendation was made that the quantity should be lessened.

Nov. 27. Patient sleeps well. He has had scarcely any unpleasant symptoms. An examination of the urine showed it to be acid, and with a specific gravity of 1024. There was a slight cloud on boiling, which disappeared on the addition of nitric acid. Under the microscope were seen only a few epithelial and mucus cells.

Dec. 1. Had a return of some of his "head symptoms" two days since, which seemed to have been produced by mental anxiety. An examination of the urine passed this morning for urea showed a deposit of crystals round the edge of the watch-glass, but somewhat less than on the previous examination. Urine was sherry coloured, and had a specific gravity of 1024.

4*th.* Has not suffered from uneasy sensations in his head, but does not sleep well. He was ordered to continue the mixture previously used, and to take every other night a pill containing calomel, ipecac, aloes, and extract of colchicum, each a grain.

Jan. 5. Pill acted very freely, and patient was directed to diminish the dose one half, as there were no clear indications for the use of purgatives. He was also ordered to continue the mixture as before. He has given up stimulants, and has no head symptoms.

11*th.* Urine of night and morning mixed, has a specific gravity of 1020, and is of a paler hue. It contains a cloud which disappears on the addition of heat. When mixed with nitric acid in a watch-glass in the proportion of one of acid to three of urine and allowed to stand, only two

small points of crystallization appeared after it had stood for an hour. Patient is greatly improved in health and spirits.

CASE III.—In October, 1868, I was consulted by a gentleman about fifty years old, who had long been subject to acidity, and suffered from what he supposed to be (that extremely vague disease) biliousness. He had not suffered from neuralgia or rheumatism, but took cold easily, and if he committed any errors of diet when suffering from a cold, was liable to violent and sudden colic. He had occasional attacks of vertigo, did not sleep well, and frequently experienced extreme depression of spirits, which sometimes made him fear mental derangement. Circulation languid, flatulence often present, and the stools small and rather dark. At that time the case seemed to me to be one of chronic dyspepsia, and he derived some benefit from the use of bicarbonate of soda. Recently an opportunity offered of making an examination of his urine, which I did, informing him previously that I expected to find the condition which is the subject of this essay. The urine examined was that of night and morning mixed, and the quantity passed during the twenty-four hours was about a quart. There was no pain in micturition. The specimen was dark sherry coloured, with a well-marked urinous odour; acid, had a specific gravity of 1030, and a cloud appeared on the application of heat, which disappeared by adding a drop or two of nitric acid. Trommer's test gave no reaction of sugar. On testing for urea, as in other specimens, with one-third part of nitric acid, the crystals of nitrate of urea began to appear in ten minutes, and in half an hour were abundant. It should be stated that stimulants did not agree with this patient, and he was quite a moderate liver.

A short time since I informed my friend, Dr. Farnham, of this city, concerning this class of cases, and on calling at his office subsequently he showed me a copious deposit of nitrate of urea from a patient labouring under intense nervous depression. This patient also slept badly. He was not addicted either to smoking or drinking. The urine was frothy, with a strongly urinous odour, of a high amber colour, with a specific gravity of 1025.5, and holding a slight mucous cloud. There was no albumen and no sugar with Trommer's test.

The literature of this subject is scanty. The observations in this essay are, I believe, the first which have been reported by an American physician. In Roberts on "Urinary and Renal Diseases," page 92, it is stated:—

"Dr. Prout believed that there existed a peculiar morbid state characterized by an absolute and relative increase of the excretion of urea, unaccompanied by pyrexia. To this condition Dr. Willis, who adopted the view of Prout, gave the name of *azoturia*. The subjects of this form of disease, according to Prout, had usually a frequent and urgent desire to pass water, both by night and day.[1] This seemed principally due to an irritable sensation referred to the neck of the bladder, occasionally extending along the urethra, but in some cases it was due, at least in part, to real diuresis. In almost every instance the quantity of urine voided in the twenty-four hours was somewhat above the natural standard. The quantity was also particularly liable to be increased by causes which would scarcely affect a person in perfect health, at least to the same degree; such as by a chilly state, mental emotion or excitement, etc.[2]

[1] Not observed in the cases reported in this Essay.
[2] Prout: Stomach and Renal Diseases, fifth edition, p. 97.

"In addition to the direct urinary symptoms there was sometimes a sense of weight or dull pain in the back, accompanied by disinclination to bodily exertion; there was no remarkable thirst nor craving for food, nor emaciation. Moreover, the functions of the skin appeared to be little deranged.

"Such is a summary of the description of Prout. He does not supply any details as to the daily flow of urine nor the daily amount of urea. At the time Prout wrote, very little was known as to the natural (physiological) variations in the excretion of urea, and the opinion he held as to urea being chiefly the final product of the metamorphosis of the gelatinous tissues, has since been proved to be erroneous. Looking at the question from the standing point of the physiological doctrines now in the ascendant, it is difficult to admit the existence of a condition characterized by the incompatible coincidences of an increased excretion of urea with absence of thirst, absence of excessive feeding, and absence of emaciation.

"Precise facts in support of Prout's view are wanting. Willis' description is too loose to give much confidence, and subsequent writers have contented themselves with a reference to Prout and Willis."

Farther on Dr. Roberts adds:—

"Nevertheless, some facts, rarely observed, have left an impression on my mind that Prout's description is not altogether fanciful."

Beale writes:—

"Lehmann, I think, states that he had not seen a case in which crystals of nitrate of urea were thrown down upon the addition of nitric acid without previous concentration."[1]

Beale also says:—

"There are some peculiar and very uncommon cases in which the urine contains this excess of urea; and at the same time more than the healthy amount is excreted in twenty-four hours. The patient is weak and grows thin in spite of taking a considerable quantity of the most nutritious food. He feels languid, and indisposed to take active exercise. In some cases digestion is impaired; in others, the patient eats well, experiences no pain or uneasiness after food, and perhaps has a good appetite. Sometimes there is lumbar pain. It would seem that most of the substances taken as nutrient material become rapidly converted into urea, and are excreted in that form. The waste of the tissues is not properly repaired, and the patient gets very thin. To refer these symptoms to the existence of a particular diathesis affords no explanation of the facts. The pathology of these remarkable cases has not yet been satisfactorily investigated."[2]

It is evident that the observations of those writers who have in late years given especial attention to urinary deposits are incomplete with regard to this subject, and an interesting field seems open for study.

In the *Medico-Chirurgical Transactions for* 1868 (vol. li.)[3] is a masterly article on this subject by Dr. Henry William Fuller, physician to St. George's Hospital. It is not necessary to add that anything from his pen is entitled to careful consideration. He states that within the last two years he has detected urea in excess in twenty-seven cases, "and so well marked and peculiar are the symptoms by which that condition of the urine is accompanied," says he, "that now, if the features of the patient's malady induce me to suspect its existence and to examine the urine with

[1] Kidney Diseases and Urinary Deposits, page 186. [2] Page 187.
See also No. of this Journal for April, 1868, p. 533.

a view to its discovery, I am seldom disappointed in obtaining the characteristic crystals of nitrate of urea."

In another part of the article he writes :—

"All the instances which have come under my notice have had several features in common. With one exception, that of a lady aged 43, the patients have all been males, varying in age from 23 to 54. Most of them have been essentially meat eaters, partaking sparingly of bread and other varieties of farinaceous food, but five of them ate meat only twice daily, and one, a member of our own profession, declared, not only that he never touched meat except at dinner, but that even then the principal part of his meal consisted of vegetable and farinaceous food. Without exception the patients have been tolerably healthy in appearance, and often somewhat florid, though in some instances they have lost flesh slightly; indeed their aspect has been so little indicative of disease, and their complaint of suffering has been so urgent, that any practitioner who did not examine the urine for urea would have surely regarded them as simply hypochondriacal. Usually the pulse has been quick and rather weak, and the patient's complaint has been of languor, flatulence, restlessness at night, and extreme nervousness. They have been afraid of encountering the rubs of every day life, and in some instances have for the time lost their pleasure in society; they have eaten fairly, though with less than their usual relish, and the feeling of languor which has oppressed them, and of fatigue which has followed even a moderate amount of exertion, has led to their abstaining almost wholly from exercise. They have usually complained of extreme depression in the morning, with a sense of heat about the eyes, muzziness in the head, and weariness after breakfast—feelings which have in some measure passed off as the day has advanced, and they have partaken, as usual, of stimulants."

Further on he writes :—

"Dr. Parkes, referring to Dr. Prout's observations on these cases of azoturia, distinctly states, 'I have never seen a disease of this kind.' It is obvious, therefore, not only that this condition of the urine has, in many instances, escaped recognition, but that the form of derangement on which it depends requires careful investigation."

In examining those cases of the disease which have been reported with a view to ascertaining its etiology, the exciting cause, in some instances, seems to have been mental anxiety, in others, it has apparently arisen from defective assimilation which has produced the characteristic nervousness and depression. In all cases the mental condition has probably reacted upon the disease, while the disease has tended to prolong the morbid mental state. In one of my own cases the commencement of the mental symptoms was attributed to a nervous shock.

We must look to pathology for aid in endeavouring to discover the essential nature of the affection, and probably there is no better guide than the writings of Dr. Bence Jones, who, in his "Lectures on Pathology and Therapeutics," has studied morbid processes with a view to add new light to the intelligent treatment of them. Taking his views as a basis, it would seem as if this were a malady of suboxidation, and in some respects similar to the diseased condition which is present in gout, for he says on page 130 :—

"When analysis shows that an excess of uric acid is thrown out of the body, this is a proof that the gouty diathesis is ready to form whenever the kidneys cease to remove the excess from the system. The presence of any urates at all in the urine is a sign that oxidation is not so perfect as it might be, and the

more urates in the urine the more imperfect the oxidation in the system must be considered; but as long as the products of the imperfect oxidation are thrown out by the kidneys or skin no gouty diathesis is produced."

"Thus, then, first, excess of urea in the urine; secondly, oxalate of lime with excess of urea; and thirdly, urates in excess, by analysis, constitute the three tests of the different degrees of suboxidation which precede the establishment of gout."

This is one of those diseases in which we should hesitate before using stimulants in our *treatment, a point of great importance.* The physician would be very likely to recommend them in consequence of the depression and apparent weakness which are present, but alcohol interferes with oxidation. In one of the cases which came under my notice, stimulants had been prescribed with the effect of aggravating the symptoms, and in another, the patient found that giving up stimulants had been of more service than any other element of treatment. It may be that they will sometimes be required and then the light Rhenish wines should have the precedence. Of course it is very important that the mind should, as far as possible, be pleasantly occupied and the patient's thoughts diverted from himself. A certain degree of relief will in some instances be afforded by demonstrating to the patient that his morbid sensations are associated with a visible lesion, for nothing is more dreary to a sick person than to feel that he is suffering from a disease supposed by others to be imaginary and with regard to which he often receives but little satisfaction from those whom he consults. With this demonstration can also be held out a hope of relief. The diet should be easily assimilable and regular exercise be recommended. One of my patients had been much benefited by systematic rubbing, which probably improves oxidation by increasing the activity of the circulation, and hastening chemical changes. As is well known, alkalies have for years been found useful in correcting the gouty diathesis, and experience would naturally suggest the use of them. "Alkalies," says Dr. Bence Jones, "assist in the oxidation of organic substances, not by giving oxygen, but by promoting the formation of vegetable and animal acids, and ultimately forming carbonates out of the burning matter." It is worthy of notice that those who have mentioned this class of cases have used a somewhat similar treatment without clearly established indications. Dr. Fuller considers the disease to be "a perverted nervous action in consequence of disturbed assimilation." He recommends "neurine tonics, such as arsenic, quinia, strychnia, iron, and zinc, together with the mineral acids, the shower-bath and the dripping sheet." These, with alterative doses of blue pill and colchicum, he has usually found to afford relief. In one or two cases of extreme nervousness he has used the bromide of potassium in conjunction with iron, and occasionally the hypophosphite of soda. In a case mentioned by Dr. Roberts, which, he says, "seems to have been one of those Prout had in view," the treatment consisted of vegetable tonics with citrate of potassa, under which the patient's health greatly improved.

The advantage of studies like that which composes this paper is, that they tend towards increased knowledge of the essential nature of disease, and remove our practice further from empiricism. Besides, we often feel the necessity in treatment of keeping the diathesis of our patient in view without looking for a particular set of symptoms which only appear when the diathesis is fully developed. Our nosology is in many instances a grouping of names which are but the names of symptoms. Who can believe that such terms as inflammation, or dyspepsia, or gout will always answer to an increased knowledge of morbid processes. Already we see diseases such as dyspepsia and consumption split up into various varieties, and we can hardly realize that smallpox and measles and scarlet fever were formerly confounded together. We see pneumonias which, so far as treatment is concerned, closely resemble rheumatism and a large variety of pains which are the expression of different conditions of the constitution.

The test for nitrate of urea is one which may be employed by any general practitioner, for "a specimen of urine which yields crystals of nitrate of urea, when an equal bulk of nitric acid is added to it in the cold *without having been previously concentrated* is said to contain excess of urea."[1] The quantity of urea sometimes found is also very striking. It is of course important to know how far the quantity of urine passed in the twenty-four hours approaches the normal standard. The test is also valuable in differential diagnosis as aiding us to distinguish between nervous symptoms resulting from anæmia and those which accompany an excess of urea in the urine.

This study also suggests the necessity of examining the urine in cases of vertigo, to see if this symptom may not be one of the many in which uric acid or its congeners may manifest itself. It would also be well to see how far sleeplessness may, in some cases, depend upon a similar cause. Here it may be mentioned, as showing how this group of excretions present themselves in various diseases, that in 1860 I found a very marked excess of urea in the urine of a patient who suffered from *intolerable* headaches, and here, after trying a number of remedies in vain, the application of leeches to the nape of the neck gave very marked relief. I have also found the spiculated crystals of urate of soda in the urine of puerperal mania.

We may, besides, be led to inquire as to how far those alkaline remedies, such as muriate of ammonia, valerianate of ammonia, and bromide of potassium, often so efficient in nervous disorders, owe their effects to the combination, with a nervine, of one of those alkalies which combine with or dissolve uric acid. We leave the subject without entering upon an undue length in its consideration, since we trust there are some points of

[1] Kidney Diseases and Urinary Deposits, 3d edition, page 185.

novelty here presented, which may at least awaken the inquiries of others, and we would bear in mind the quotation "that the increase of knowledge is not like that of other things, being often accompanied by a considerable diminution in bulk."

ART. VII.—*On the Inhalation of the Nitrous Oxide Gas when the Lungs are Diseased.* By E. HOLDEN, M. D., of Newark, N. J.

THE cases which form the basis of the following article will probably commend themselves as of some interest to any physician called often to answer the question, "Can I inhale gas at the dentist's with impunity?" The observations from which the cases are selected have been numerous, and the cases themselves are, in a measure, typical of classes.

The availability of this gas for slight and brief surgical operations—its speedy action and the equally speedy disappearance of all effects of anæsthesia, are making its use so common that all information regarding it must prove of value, and especially so in view of the awakened interest in the subject of inhalation of gases as curative agents. I may be pardoned for parenthetically stating that, while my own experience with nitrous oxide as a therapeutic agent in phthisical cases has been anything but favourable, and I have seen hæmoptysis immediately follow a carefully conducted inhalation of oxygen, yet I by no means felt assured that their inhalation *per se* was especially injurious at the commencement of the present investigation. Nitrous oxide in its purest state produces rapid venosity of circulation; the great founder of the German medico-anatomical school, Rokitansky, asserts that a condition of venosity is inimical to tubercle (p. 241, vol. ii.); theoretically, therefore, the gas should be beneficial in tuberculosis. Oxygen produces, of course, the opposite condition.

Tuberculosis, according to not a few brilliant labourers of the present day, is but a commencing death of organism—an excessive retrograde metamorphosis of tissue-destruction without adequate repair, and which the oxygen of mountain air and of unrestrained out-door life is credited with power to arrest; theoretically, therefore, oxygen should be beneficial by inhalation. M. Demarquay has recently experimented in this direction, and paradoxical as the ideas in the cases as stated may be, they are easily reconcilable by the belief that *neither* of the gases as used has been, or is likely to be, curative. The general effect, however, of the agent under consideration, when persistently and frequently inhaled as a therapeutical means, has little to do with the answer to the question already quoted, and which can be more pertinently rendered, "Can I, having diseased

lungs (and especially if subject to hæmoptysis), inhale nitrous oxide gas at the dentist's with safety ?"

Most of the cases from which the following have been selected have been observed at the dental rooms of Dr. J. B. Da Camara, in this city (Newark, N. J.), whose extensive experience with the gas is probably second to none in this country. The gas was made in the ordinary way by heating nitrate of ammonia in a retort, maintaining a temperature of 400° to 500°, and thoroughly washing through successive jars of water. The ammonia was selected with especial care, in order to avoid accidental contamination with hydrochloric acid, the presence of which invariably results in an admixture of free chlorine with the peroxide, and consequently in an irritant effect upon the lungs. It is well to observe that frequently persons presented themselves who had at other places tried inhalation in vain, violent headaches, convulsions, suffocating sensations, &c., had invariably necessitated abandonment of the effort; yet they succumbed with greatest ease when the pure gas was administered. This point is the more important, since none of the effects noted in the subjoined cases can be attributed to impurity of gas.

From the washing-jars the gas was conducted to large metallic retorts, holding from 400 to 500 gallons, and made fresh every day, since it is a singular fact that age seems to impair its anæsthetic power, and gives rise to symptoms never observed when the gas is used in freshness and purity. This impairment is far more marked when rubber bags are used as holders, and seems to admit of explanation in such cases; but in metallic receivers suspended in water already saturated with all the gas possible to be absorbed (three-fourths of its bulk), without escape and without diminution of volume, reason for loss of anæsthetic power is not so apparent.

The inhalation was performed with total exclusion of atmospheric air through a mouthpiece of silver which fitted accurately about the cheeks and lips, expiration being performed through a valve in the same piece. The patient was always in the sitting posture, to facilitate easy and frequent auscultation and percussion.

The two following cases may be interesting as illustrative of the general effects of inhalation upon a healthy person.

CASE I.—A girl, æt. 12 years; ruddy complexion; about average size; lungs, heart, and indeed all organs, in sound condition; no nervousness or apprehension; pulse 65, after steady inhalation for one minute; pulse accelerated without increased number of respirations; rapid discoloration of lips, then of extremities; no distension of superficial veins; marked lividity of whole face; eyes remaining open (not a universal rule, but rather unusual) disclosed slow dilatation of pupil; eyeballs visibly receding as after death, and the countenance corpse-like; anæsthesia complete before expiration of second minute, and preceded by slight struggling as if to prevent suffocation; pulse 80, soft and regular; inhalation discontinued;

duration of anæsthesia fifteen seconds; time from instant of complete anæsthesia to complete and perfect recovery, between one and two minutes.

Lungs in this case not examined during anæsthesia; as a result, however, of many examinations of others, the following statement may be considered illustrative :—

The first change, and one that usually occurs after the third or fourth full inhalation, is a marked softening of bronchial air sounds, and intensification of the vesicular, followed by speedy intensification of the former and obliteration of the latter. Then follows the sub-crepitant rhonchus indicative of mucus in the finer bronchial tubes, then rapidly the sounds of air-bubbles in the larger tubes, prolonged respiration, and vocal resonance.

In several cases suffering from the commonly-styled "stuffed" feeling that often ushers in a subacute attack of bronchitis, and in which a marked sibilant character was observed in the passage of air through the finer bronchi prior to inhalation, a remarkable cessation of such sound was observed after a few inhalations, whether correctly or not, and was attributed to sudden relaxation of bronchial spasm. This peculiarity will be again referred to in connection with Supplementary Case II.

The second of the cases designated illustrative is more rare, because anæsthesia is peculiarly rapid, and unaccompanied by lividity or other noticeable symptom.

CASE II.—Male, æt. 27, unmarried; temperament sanguine; complexion fair; health good, and believed sound in all respects, but mother died of consumption, and party had suffered from (strumous) necrosis of femur, and might, perhaps, be said to be more than usually susceptible to influences of temperature.

Examination prior to inhalation revealed weakness of vesicular quality, want of proper breeziness and tone to general respiration, a condition suggestive also of imperfect resilient power of lungs, but no disease; pulse 72.

One inhalation produced incoherence of speech, and four anæsthesia. Examination during inhalation gave results similar to those stated as common to sound lungs, but no lividity of extremities or lips existed; vesicular quality of respiration absent during the whole period of anæsthesia, however, and gums and inside of cheeks of clearly venous hue; pulse 80 to 95, and variable. Anæsthesia prolonged two minutes; recovery complete in two minutes, and normal condition of lungs restored within that time.

The following notes also, taken at intervals during the five months occupied in the investigation, may be of interest :—

a. Nitrous oxide inhaled in the manner indicated produces no tendency to laughter, admixture with atmospheric air being essential to the development of this well-known characteristic.

b. There is usually considerable struggling at the approach of anæsthesia, occasionally suggestive of desire to escape suffocation, but which is probably owing to an automatic impulse occasioned by the thought of pos-

sibility of suffocation already existing in the mind of the patient, since the subject last in the mind becomes the foundation of any dream that may occur; for example, the bubbling of water produces in the semi-unconsciousness just preceding and following anæsthesia a dream of music; the steady tick of a clock, the roar of the surf on the beach whispers of pleasure or pain, the scenes or instruments that usually give rise to these emotions. It is probable, also, that in this way we may explain the evident erotic tendencies that are so frequently developed, the most chaste and virtuous being liable to gestures and movements which, if not so evidently automatic, would be considered most lascivious. (See Supplementary Case I.)

This tendency is, without doubt, the result of the thought of possible violation; for the subject of it is almost universally a female, and there are few who sit down in a dentist's chair who have not heard or read of the stories regarding such attempts upon females while in a state of unconsciousness, and almost always where this erotic excitement is developed there are none but males present, the patient partly reclines with feet somewhat elevated, and a fear, perhaps only momentary, that there is danger, would be a most natural one.

c. There is almost always intensification of the senses, especially of sight and hearing, just prior to unconsciousness, and in spite of the seeming contradiction in the statement this intensification may possibly continue in many cases throughout (the faculties of memory and coördination being in abeyance), for however oblivious upon recovery a person may be of having suffered pain, yet the contortions of countenance and occasional screaming show that feeling is not destroyed; of course it is not asserted that anæsthesia cannot be made so complete as to utterly destroy feeling, but usually this is not the case, although to all intents and purposes unconsciousness is perfect, and no memory of pain exists upon recovery. I am indebted to the dentist, at whose office many of these experiments were made, for a suggestion which is probably a correct one in reference to the anæsthesia produced, which is that there is simply a lightning-like flow of ideas with impairment and in many cases obliteration of memory, for a person *may stand erect* and gradually inhale sufficient gas to produce complete oblivion, and experience all the minute shades of thought and feeling that belong to every-day life, and this through an apparent series of days and weeks and even years, live, travel, be ill and recover, enjoy, suffer, and in fact undergo a distinct existence, and yet recover consciousness in time to prevent falling. If in this ecstasy a tooth be drawn, or other surgical operation be performed, the painful sensation is intruded upon with such lightning-like rapidity, and is so speedily merged into the tissue of the dream, as to be overwhelmed and forgotten.

d. Vision is, as I have said, frequently intensified, and perhaps invariably so long as a state of semi-consciousness is maintained; the minute twigs

on somewhat distant trees, the fine letters upon street signs, faces out of recognizing distance, &c., are brought within range often to an astonishing degree. Hearing is also intensified, although greater care is necessary to maintain only a certain amount of æsthesia, for the line is easily crossed, and dulness of hearing is the consequence.

e. There is occasional (not invariable) dilatation of pupil.

f. There always exists an increased tendency to bleed, whatever be the condition or temperament of the patient, and whatever be the part of the body cut or abraded. The case of the young girl cited first, as illustrative, was the subject of severe hemorrhage from the gums during the operation of extracting teeth, and at intervals, for three weeks following (on two occasions to syncope).

g. Three patients, the subjects of epilepsy, hysteria, and epileptiform hysteria respectively, came under observation, in regard to which the following extracts are made from notes:—

The first, a girl of 19, who had been subject to convulsions since childhood, exhibited no tendency to convulsion during, or subsequent to, anæsthesia, although she had suffered from attacks as often as ten or twelve times a week for several weeks prior to inhalation.

The second, an octoroon aged 21, had been the victim of as frequent attacks of epileptiform hysteria; she had two convulsions in quick succession upon the approach of unconsciousness, and several immediately after (no dilatation of pupil, and no lividity).

The third, typical of a very large class of patients, exhibited violent hysteria immediately upon regaining, or rather approaching, consciousness, and for several hours suffered recurrence of attack.

h. While an antipathy that may be termed idiosyncratic may actually exist to the inhalation of the gas, inability to produce anæsthesia almost invariably arises from impurity of the anæsthetic, or from its staleness, and a large majority of all the headaches and subsequent bad feelings that are sometimes complained of, undoubtedly arise from the same cause. Case IV. is, however, an exception to this rule.

CASE I.—Male, æt. 35, 5 feet 10 inches high, 140 pounds weight, florid complexion, healthy appearance, had occasionally raised blood last winter and ten years ago, at each of these periods, covering a space of six weeks; had also had two attacks of unconsciousness attributed to sunstroke; has often inhaled the gas.

Examination of lungs prior to inhalation showed disease of one apex probably tubercular, incipient, and quiescent. Five full inspirations produced marked lividity of lips and speedy anæsthesia, with twitchings of muscles, and symptoms of threatened convulsions. Examination during unconsciousness showed in vicinity of disease first, rapid extension of area of dulness, accompanied by increased resonance of bronchial air sounds, intensification of vocal resonance (the occasional moans of patient being transmitted with singular acuteness), then fine crepitation in vicinity of disease gradually appearing also in healthy portions of both lungs and becoming a marked coarse rhonchus at apices with total disappearance of vesicular murmurs.

Upon withdrawal of the anæsthetic, recovery was remarkably rapid (30 seconds).

Examination immediately after return to consciousness gave a generally intensified respiratory murmur with diminished vesicular quality, and rales more or less pronounced, bronchial murmur tubular, two points in one lung near the base an occasional twang as of a snapped guitar string, restoration of normal quality and condition too rapid to permit proper percussion (45 seconds), restoration of natural colour to lips and face equally rapid.

Examination twenty-four hours after inhalation showed normal condition restored in healthy portions, and no marked change at point of disease.

Patient states that having had occasion to inhale frequently both in this and a former winter, he had been subsequently troubled with raising of blood and irritative morning cough, which discontinued upon renouncing the practice.

CASE II.—Male, æt. 54; mastication of food impaired by loss of teeth, and therefore dyspeptic; has a cold, states that lungs were always weak; never raised blood, has the appearance of moderate health. Examination prior to inhalation: Right lung sound, left gave pronounced bronchial breathing at apex; expiratory murmur jerking and wavy; vocal resonance behind scapula over a space of two square inches, no signs of softening or vomicæ; pulse 90.

Under inhalation, nervous struggling somewhat during second half minute; lips and nails livid; becoming partly unconscious, tore away the inhaler; after two minutes again inhaled; unconscious in one and a half minutes; recovery commenced almost immediately upon withdrawing gas; laughter and crying; volubility with connected and intelligible speech two to three minutes, during which, examination was again made; pulse 100.

Examination during unconsciousness gave duplication of sounds stated under Case I.

Examination after discontinuing inhalation gave bronchial breathing well marked and inclined to tubular, over whole of upper portion of both lungs; vesicular character of inspiratory act replaced by sibilant murmur; crepitation in vicinity of solidified tissue; gradual return to normal character; party expresses a sense of great relief in breathing, and feels generally better than before inhalation.

CASE III.—Young lady æt. 24, states that she has weak lungs; never raised blood; takes cold easily; is subject to pain in left shoulder; complexion good; appearance that of average health.

Examination before inhalation: right lung sound; left, under scapula, shows vocal resonance, pronounced bronchial breathing, prolonged expiratory murmur, and in short the evidences of consolidation of tissue without softening or local inflammatory action.

Under inhalation pulse ran down rapidly, becoming weaker, till almost imperceptible; much gas required; lividity not marked; nervous twitching and convulsive struggling considerable.

Examination after anæsthesia (two minutes) confined to spot above referred to: Breathing amphoric; fine crepitation in vicinity of consolidation (vesicular murmur elsewhere clear and distinct); no increase or change in sensitiveness of part; sounds strongly suggestive of the accession of diseased action upon a latent phthisis, such as is usually ascribed by the patient to a new cold.

CASE IV.—Female, æt. 35; has had occasional attacks of dyspnœa upon exertion, referred by her physician to disease of heart; has tried before to inhale nitrous oxide without success.

Examination prior to inhalation showed signs of incipient phthisis in both lungs at apices; heart sounds suggestive of dilatation (weak action and heightened systolic pitch); apex beat, however, distinct; no undulatory impulse, no prolonged post-systolic silence.

Inhalation of more than a few breaths of gas impossible, although pulse remained unchanged, and no signs occurred of systemic obstruction; upon removing the tube patient gasped convulsively for about a minute.

Examination during inhalation gave simple respiratory murmurs, puerile in character, with no other change; heart sounds more forcible with less quickness, exaggerated but not sharpened, giving to the ear a sensation of fulness or roundness.

Inability to inspire seemed to arise from loss of control over respiratory muscles, the pulse not accelerated nor heart's action laboured.

The same phenomena occurred at two previous inhalations.

CASE V.—Female, married, æt. 36, delicate in appearance, had taken gas before with no ill effect; knows one lung to be weak; no preliminary examination.

Examination during inhalation and while recovering consciousness: Right lung presented sounds common to well lung under anæsthesia (*i. e.*, exaggeration of respiratory murmurs, the tubular character of bronchial air column predominant); left lung gave all the sounds of cavity with progressive softening and singularly modified metallic tinkle; as patient was recovering consciousness she moaned, and vocal resonance was found well marked; great dulness on percussion, and apparent consolidation over large portions of upper lobe of left lung.

These sounds gradually changed, and in two minutes it was evident that no cavity existed, but that a small space of lung tissue was impervious to air and had been or was the seat of disease.

For several minutes the evidence of vascular congestion of the vesicular capillaries was well marked, and for five minutes after commencing to recover fine crepitation in the vicinity of consolidation showed an increased secretion of mucus.

Lividity of lips and finger-nails not well marked, and pulse fluctuated, probably from involuntary struggling. This patient had at times been troubled with severe cough and expectoration; never raised blood, but was subject to paroxysms of coughing upon rising in the morning.

Immediately after recovery and examination inhaled again to anæsthesia; auscultation and percussion gave same result as stated.

CASE VI.—Female, æt. 40, plump, well nourished, ruddy complexion, healthy looking, married. To my surprise found prolonged expiratory murmur under left scapula, vocal resonance and dulness at posterior apex and above scapula. Patient said "that lung is weak and sometimes have had pain in it." Liable to colds and cough; never raised blood, but once had a long cough with free expectoration; under clavicle on left side found prolonged expiration and general puerility of character of respiratory murmur.

Patient inhaled quietly and rapidly; lost consciousness without struggling; lividity slight and anæsthesia brief, but at the instant of unconsciousness my ear, being under left scapula near its superior portion, heard

distinct metallic tinkle; a snapping at short intervals as of a wet guitar string; and rhonchus speedily followed by moist crepitation and pectoriloquy.

Examination after recovery (several times within five minutes): Crepitation coarser but still well marked; transmission of voice sounds probably from stagnating circulation through vesicular capillaries and occlusion of air cells, but suggestive of dilatation of bronchi and pressure of air vesicles toward the thoracic walls, slowly disappearing, however.

No bad effects experienced beyond an attack of hysterical crying.

CASE VII.—Lady, æt. 33, frail looking, with hectic flush on each cheek; has had short hard cough for several months on rising in the morning; occasional pain through the right shoulder and heavy feeling on the chest in front; had also hæmoptysis somewhat profuse one year ago, was then in apparent health; has since had uterine troubles; emaciation not marked; is better now than for months; had once tried to inhale nitrous oxide from a rubber bag, and under unfavourable circumstances, "was almost suffocated, not put to sleep;" has recently been examined by a physician of some prominence in town, and pronounced (party says) sound.

Examination before inhalation: Vocal resonance and dulness behind left scapula with prolonged expiratory murmur; the right lung, the supposed seat of former hemorrhage (since a burning sensation in that lung had resulted), considerably diseased; unable to decide without more critical examination whether there was cavity, but suspected it from hoarseness of bronchial note and voice sounds; pulse rapid and quick (95); under careful administration of gas the pulse rapidly assumed an hemorrhagic feeling; patient gasped and paled to an alarming degree; ear at lung detected sounds detailed in previous cases in lower left lobe, the upper giving simply exaggerated voice and breath sounds; the right lung at point of chief disease (apex) gave coarse crepitation and rhonchus, then scarcely any respiratory sound whatever. This fact, in connection with pulse and aspect of patient, decided us to abstain from giving more gas. Anæsthesia incomplete. Patient upon recovery was exceedingly alarmed, faint and gasping, clutching at the right and left breast alternately, and presenting all the impression of a person labouring under hæmoptysis. No blood however came, and in about five minutes patient recovered completely and the lungs assumed the condition noted in the preliminary examination; no headache or bad feeling resulted.

CASE VIII.—Male, æt. 37, has been a soldier, lost one leg and endured considerable hardship; raised blood about once a year for several years; has had for a long time a slight cough, and eight years ago was told by a consultation of physicians that one lung was almost gone and the other full of cavities, but since then has made up his mind to live, and has been steadily improving.

Found on preliminary examination that the lungs were in tolerable condition, one sound, the other diseased at the apex (left) with apparently a small cavity, but without the sounds of active disease.

During inhalation *no marked change occurred*, yet party was fully under the influence of the anæsthetic; face and lips livid; stertorous breathing as if from chloroform; eyes open, and a strong tendency to clonic spasm. (This stertor was noticed in none of the preceding cases.) Party upon rousing up was wild and incoherent for about a minute.

Critical examination during return to consciousness enabled me to detect

no change beyond a very slight exaggeration of respiratory murmur, and this not confined to the point of former disease.

Examination after recovery showed still no change; party felt well and exhibited no effects whatever of his recent anæsthesia.

CASE IX.—Female, æt. 30, medium appearance as regards health; states that she has weak lungs and knows one lung to be seriously diseased or at least has been told so by physicians.

Never raised blood, but has long had a short cough and aching pains about the shoulder-blades; has no strength, &c. Upon examination prior to inhalation found at posterior portion of middle lobe of right lung a circumscribed spot of perceptible dulness with roughness of murmur and evident deficiency of resilient power in pulmonary tissue; some vocal resonance also and impairment of vesicular character. Examination during inhalation over point of morbid sound showed roughness and vocal resonance exaggerated, and heart sounds clearly transmitted; after a few minutes coarse crepitation and sounds like the stretching of rubber bands; much gasping, lividity, struggling, and stertor with complete loss of consciousness. (Had tried gas before in St. Louis, and dentist had been obliged to desist.)

Upon recovering was unconscious of having struggled, and in a few minutes felt perfectly well with no headache or other ill feeling. After ten minutes the condition noted in preliminary examination was restored.

CASE X.—Female, married, æt. 36, delicate in appearance, and thinks both lungs diseased; has had cough over a year, and hectic fever within six months, but of short duration. Has been gaining flesh and strength under cod-liver oil and wine; able to be constantly about; never raised blood.

Examination before inhalation: Disease of one lung at apex and of considerable extent with small cavity; no circumscribing dulness or consolidation in vicinity of the cavity; no evidence in short of progressive deposit or new breaking up of tissue.

Inhalation gave sense of great relief and lightness in the chest.

Examination during inhalation: Rapid enlargement of area of dulness; coarse crepitant râles and speedy disappearance of vesicular murmur throughout diseased lung.

Sound lung affected in a peculiar manner; apex, which had before appeared healthy, presented all the evidences of incipient phthisis, the remaining portion of the lung being affected in the manner indicated as common to healthy lungs.

After return of consciousness the sound[1] lung speedily cleared itself of morbid sounds; the other much more slowly.

The above cases given in detail would be left without comment but for the fact that as they are copied almost verbatim from notes made at the

[1] During the ensuing four weeks this case was repeatedly examined; several inhalations were indulged in for the pleasurable relief obtained, the demand growing more urgent and at shorter intervals; pulse, always somewhat accelerated, gradually maintained a persistent celerity that demanded a discontinuance of the practice. Contrary to advice, she continued (secretly) inhalations elsewhere under assurance of an empiric that she would thereby become permanently cured. After two weeks of rapid failing was found having hectic fever and exhibiting advancing disease in both lungs; pulse constantly above 100, and emaciation very rapid.

time of observation their important features are not made prominent. The observations of which the cases are designed to be illustrative indicate to my mind, although they by no means prove the following facts, and from them it is easy to deduce an answer to the question proposed to be answered at the beginning of this article.

1st. Inhalation of nitrous oxide is in *some degree* likely to prove injurious in cases of phthisis.

2d. That inasmuch as pulmonary congestion is almost a necessity to anæsthesia by this agent, and is concomitant with a well-marked tendency to increase of hemorrhage from any cut or abraded surface, its inhalation is somewhat hazardous in cases where hæmoptysis has occurred or where there exists an hemorrhagic diathesis.[1]

3d. That the sense of relief frequently experienced by those having diseased lungs is alluring simply and does not indicate benefit, and believing it to be due to an annulling of the hyperæsthesia of the bronchial nerves, the inference follows that the agent may prove curative or at least palliative in asthma and in affections accompanied by bronchial spasm.

Supplementary Case II. is referred to as an example of its effect.

The two cases following are appended as of interest.

SUPPLEMENTARY CASES.—I. Female, æt. 62, feeble, supposed to have heart disease, complexion pallid, pulse irregular, subject to "faint spells;" preliminary examination showed no evidence of disease of heart; irregularity of pulse, probably due to nervous excitement.

Respiratory murmurs markedly puerile.

Under anæsthesia pulse became regular, then gradually imperceptible; face livid and peculiarly corpse-like; puerile character of respiration gradually gave place to soft vesicular murmur and normal condition found in sound adult lungs; evident erotic excitement with motions as of sexual intercourse just prior to and following complete anæsthesia.

II. Boy, æt. 12, with the contracted chest, distended superficial veins, and peculiar look of an asthmatic.

Preliminary examination showed quite extensive emphysema of right lung with bronchitis of both, of chronic character and eccentric hypertrophy of the heart (right ventricle dilated); apex beat two and one-half inches from proper place toward median line; area of dulness hard to define owing to contiguous dulness of lower left thorax, but estimated at three and one-fourth in transverse and four and three-fourths in vertico-oblique diameter, or about the size of the heart of an adult; pulse irregular; wheezing and trachéal rattle particularly well marked; has frequently raised mucus streaked with blood; had attacks of asthma since the age of five years. Examination during inhalation, which was not pushed to anæsthesia, showed gradual freedom of respiration, and was accompanied by a sense of great relief. After two minutes the air penetrated freely without wheeze or rattle to every part of both lungs; a portion of left lung where

[1] I have been credibly informed of cases where hæmoptysis has occurred in the dentist's chair, and have known of others following the inhalation of the gas.

vocal resonance had been noticed before inhalation assumed healthy sounds and resonance disappeared.

Examination ten minutes after recovery showed still comparatively healthy sounds throughout the lungs.

The night following this exhibition of the gas the patient had *no attack* of dyspnœa; no wheeze or rattle, and felt great relief in breathing, the first time in several weeks; he was moreover able to lie down in bed, for the first time in an equally long period. The next day examination prior to inhalation showed greater area of true vesicular murmur, and certainly what appeared marked improvement in general respiratory condition.

Examination during inhalation showed a gradual clearing out as it were of air tubes with marked vesicular improvement, passing gradually into a condition similar to what has been described, viz., of evident congestion and occlusion of air cells; well pronounced bronchial breathing, and at apex of left lung clearly transmitted heart sounds. After inhalation, which had been continued twelve minutes, patient spoke of the same sense of relief even while there remained still considerable occlusion of air cells.

The transmission of heart sounds, which singularly had occurred at seat of greatest emphysema, gradually ceased. Pulse and heart's action assumed a steady regularity during inhalation and became again irregular upon recovery.[1]

Daily inhalations of about fifteen minutes were indulged in, but in no instance to complete anæsthesia, and from the date of the third inhalation no attack recurred for a month, and patient, who meanwhile had been using no other medication, was instructed to return home, and upon the first suspicion of threatened dyspnœa to resort to nitrous oxide; accordingly, February 18, he presented himself, saying he had felt "wheezy, and found his breath somewhat shortened."

Daily inhalations as before, but for four days only; removed every vestige of trouble, and an examination of the heart gave the following remarkable result: area of dulness diminished laterally one-half inch; longitudinally three-fourths of an inch; apex beat one and one-fourth inches from its normal place.

Several weeks of immunity from all unpleasant symptoms have elapsed at the date of writing, and while one case proves nothing, however corroborative it may seem of a preconceived theory, the suggestion afforded by the remarkable relief obtained may be of service to some sufferer similarly situated.

ART. VIII.—*On the Proper Use of the Obstetric Forceps.* By ELLERSLIE WALLACE, M. D., Professor of Obstetrics and of the Diseases of Women and Children in Jefferson Medical College, Philadelphia.

SEVERAL practitioners from the western section of our country, who attended my lectures during the past session, stated to me what I had often

[1] This feature, already before noted, occurred in many instances, and is suggestive of possible benefit to be derived also by sufferers from cardiac neurosis.

previously been told, that there was a great popular prejudice in their neighbourhoods, which was fostered by the profession, against the use of the obstetric forceps, so that if any obstetrician were known to carry that instrument with him to a case of labour "it would ruin him—it would howl him out of practice." They, therefore, urged me to publish the views on the subject of the proper use of the forceps, which they had heard me inculcate in my lectures, and requested that they should be published in the *American Journal of the Medical Sciences*, "for they were persuaded that such publication would tend to counteract the ignorance and prejudice which deterred practitioners from resorting to instrumental delivery in appropriate cases, and which thus often allowed the lives of mothers and children to be sacrificed."

A student from the west said to me, "There is not a pair of obstetric forceps in my county, and in the last year three women have died, undelivered; and when the two physicians in attendance were asked the cause of the deaths, they replied that the children could not be born, and so, of course, the women died!"

One gentleman told me, "There is but one pair of forceps in the county, and these I own. They are occasionally, but rarely, borrowed."

Another says, "I was called in consultation, just before leaving my home last fall, to see a woman who had been in labour for nearly two days; she was seriously exhausted; the breech of the child was presenting at the inferior strait; with my blunt hook I drew the breech down, gently and patiently. The entire breech was devoid of cuticle, which had been pulled and rubbed off by the attempts made to deliver the buttocks, by the fingers, prior to my arrival. The child was dead; the cord was flaccid and soft, and no pulsation in it. The head lodged in the vagina. The woman could not expel it. I said, 'Give me my forceps.' The answer was, 'No, sir, we both object to the use of the instrument; give her fifty minutes and she will deliver herself.' I said, 'I will not give her fifty seconds.' I would not consent to be overruled; I applied the forceps, and instantly removed the head, for which operation I was censured. The woman recovered perfectly."

I could multiply such records.

I have said to my class that "I deny the right of any man to attend a case of labour unless he carries his forceps with him; and I consider that teaching to be erroneous, which says, go without your forceps, but *send for them* when you see the probable necessity of their use." Now, I appeal to the experience of obstetricians who have *sent for their forceps* under emergency. Have they not sometimes regretted that they had them not at hand, for *instant* use, in certain of these emergencies?

Suppose, now, a case of puerperal convulsions occurring during labour, caused, as they often are, "by the pains of labour as the head is escaping

from the circle of the os uteri,"[1] or "when it distends the perineum, and partially dilates the vulva."[2] "It is then, especially, that a prompt termination of the labour puts an end to the convulsive attack."[3] Under these circumstances "the very best practice . . . . is to deliver the patient. . . . . There should be no hesitation in using the forceps."[4] But if your forceps should be at your home, perhaps miles away? And we all have seen this awful malady suddenly set in, without more than a few minutes or 'a few seconds' warning. And so of other formidable conditions or accidents, such as placenta prævia, partial or complete; accidental hemorrhage; prolapse of the umbilical cord; rupture of the vagina, or uterus, where an *instant* delivery—impossible without the forceps—*may be* indicated. Or in cases of hernia, of heart disease, of phthisis with hemorrhages on exertion, of exhaustion rapidly occurring, &c.; cases in which prolonged labour is danger and death to the mother, and thence to the child, shall you send for your forceps, miles away? or shall you—not possessing the instrument—seek to borrow a pair from some one and find that "there is not a pair of forceps in your county?" Far better is it to take your forceps to a hundred cases in which they shall not be required, than to want them in a single case, and then to be without them.

I well know that some high authorities object to taking the forceps to every case of labour on the ground that *we may be tempted to use them unnecessarily, and therefore improperly!* Shall a man not be trusted with the tools of his trade?

The late Dr. Chas. D. Meigs used to tell his classes of a case of breech presentation, in which the head of the child lodged in the vagina. He pressed off the perineum, and admitted the air freely to its mouth and nostrils. "The child cried from within the vagina, and I felt a hope that the forceps, *which I now sent for*, would arrive in time for its succor. In two minutes after I received the instruments they were applied, and the head withdrawn, but *it was too late to resuscitate the child.*" The case is recorded in his *Treatise on Obstetrics.* If he had carried his forceps with him, a life would have been saved.

I was summoned some time ago to attend a young woman in her labour. Upon entering the house I learned that the child's entire body had been born some minutes. I ran up stairs, touched the umbilical cord and found it silent. I did not wait to warm or grease the forceps. I did not even remove my overcoat, but at once put the forceps on, and delivered the head. The child's heart-throb could not be heard nor felt. I inflated the lungs a few times, and then the heart sounded. I was obliged te continue artificial respiration for more than twenty minutes before the child began to breathe. It revived and did well. Suppose I had lost time by sending for my forceps—two-thirds of a mile—to my house! Many an obstet-

[1] Colombat. [2] Tyler Smith. [3] Cazeaux. [4] Bedford.

rician has met with just such cases, and has dealt with them in the same way, and with like results.

Further, I have said to my class that the forceps are not used as often as they should be. I have taught that when the woman's powers *begin* to fail, when the pains are diminishing in force, frequency, and duration, and *before exhaustion can set in*, the instrument should be applied, if it be possible to apply it. I dissent from the doctrine which is laid down in some books, that the forceps must never be applied within the os uteri. Suppose the head will not enter the superior strait because of undue size of head, or of somewhat contracted pelvis, if we wait till the os uteri has risen above the head, we will wait till the vagina has been elongated to some ten inches or more—an anatomical impossibility. We occasionally meet with cases where the pains are waning out, or where, indeed, all labour pain has ceased, and where the os is yet not fully dilated, and is, possibly, somewhat tense, and the woman is more or less exhausted. We may give her good broth, or brandy punch, etc.—we ought to do so, to support her vital powers—but we *must*, in such cases, apply our forceps, and, by gentle traction, wedge open the os uteri, and gently and steadily deliver her, and so save her life and the life of the child.

Let us suppose that the child's head is jammed and locked in the pelvis; —how long shall we leave it there? How long shall we permit a well acting uterus to *compress* the placenta against the buttocks of the child, and to *express* from it the child's blood, to the risk of the child's life? If the head do not advance under the influence of (say) six or eight good and strong pains, we should apply the forceps, and *make* it advance, first, to save the child, and second, to save the mother's tissues from injury by compression too long continued. Some authorities tell us to wait for four hours, and others say wait for six or eight hours, and let the head be moulded by these hours of pain, so that it may pass on without assistance. I consider such doctrine to be bad practice, and worse humanity.

Objectors to the forceps say that labour is a physiological process, and must not be interfered with, except in last extremity. Who has not heard this remark, or one somewhat like it? Now I would insist that labour is *not* a physiological process, unless it be *natural* labour, where the woman can deliver herself safely, and with safety to her child. All other labours are preternatural.

If the head ceases to advance after having been subjected to six or eight good and strong pains, is that a natural condition? Is it physiological? Is it not rather a pathological state engrafted upon a physiological process? Natural labour is, more or less, regularly progressive, both as to dilatation of the os uteri, and to descent of the child. Otherwise, the labour becomes preternatural. If six or eight pains, of good average power, cannot propel the head when it is in the pelvis, the labour is now preternatural—it is not progressing according to natural and physiologi-

cal laws—and so, by all allowance, aid is demanded at the hand of the obstetrician. I was called in consultation, some time ago, where a head had been impacted for only some four hours. Craniotomy was necessary. But the woman had a frightful slough of the vagina, and her recovery was tedious. The slough was caused by four hours of pressure.

We see cases of arrest of the head by a too resistant perineum, the pains diminishing in frequency, duration, and power. If the stronger pains, of greater length and of more frequent occurrence, have not propelled the child, shall these feebler, shorter, and more distant pains accomplish the delivery?

Put on the forceps, make a little extension, and see how quickly and how easily the head will be born. (See *Cazeaux*, second American edition, pages 825–6.)

Dr. Andrew Nebinger, well known in our city as a practitioner of large experience, says: "I have never gone to a case of labour at night without my forceps, nor even by day, unless my patient was close by. I have, in a few cases, I believe, erred, but *by omission*, in not applying the forceps soon enough; I certainly have not erred *by commission*, in applying them unnecessarily." Dr. Penrose, Professor of Obstetrics and Diseases of Women and Children in the University of Pennsylvania, tells me that he always carries his forceps with him to cases of labour, and has yet to regret having applied them too soon, or too often.

Of course, in making the above remarks, it is supposed that the practitioner thoroughly understands the forceps, the mode of application, and the nature of their action. There can be no doubt that this instrument, in the hands of the imprudent and unskilled, may be as potent for evil as, under proper circumstances, it is powerful for good.

I am well aware that to most of the readers of this Journal the doctrines now inculcated have no novelty, and the expression of them may seem to be unnecessary, but we have been induced to publish them in compliance with the earnest request of many respectable practitioners who desire to be sustained in the performance of their duties, and protected against the slanders to which they have been exposed.

ART. IX.—*On the Influence of Section of the Cervical Pneumogastrics upon the Action of Emetics and Cathartics.* By HORATIO C. WOOD, M.D., Jr., Professor of Botany in the University of Pennsylvania.

LAST summer, whilst making the investigations upon the veratrum alkaloids, which were reported in the January number of this Journal, I had occasion to kill animals with veratria, after division of the pneumogastrics

in the neck, and was surprised to find that neither vomiting nor purging were induced. At first the simple explanation of idiosyncrasies suggested itself, but when several experiments coincided, it was obvious that individual peculiarities could not account for habitual results—that there must be some connection between the pneumogastric nerves and gastro-intestinal secretion; especially was this the case when the use of veratroidia was followed by similar absence of symptoms.

The experiments performed last summer were too few in number to lead to any conclusion whatever, but acted simply as an incentive to the present research, which was undertaken the more freely as tending to throw light upon the causes which, in various diseases, prevent purgatives from acting except in an increased dose.

The first question that arose in my mind in entering upon this investigation was as to the anatomical relations of the pneumogastrics and the intestines.

A prolonged search through English and French anatomical works resulted only in the confirmation of my previous idea, that the pneumogastric nerves do not descend in the abdomen below the upper end of the duodenum.

Finally, however, my attention was directed to a beautifully illustrated prize essay published in the *Zeitschrift für Wissenschaftliche Zoologie*, Band X., by Dr. J. Rollman. In this the author claims to have demonstrated that, whilst the anterior or left pneumogastric is distributed in the abdomen to the stomach and liver only, the posterior or right nerve, giving off but few filaments to the former viscus, passes to the liver, the spleen, the kidneys, supra-renal capsules, and the whole of the small intestines.

There consequently seemed ground for believing that such anatomical relation exists between the par vagum and the intestinal canal as might account for a connection of function between them. In order to discover the opinions of other observers as to the effect of section of the pneumogastrics upon secretion in the stomach and bowels, a search through all accessible French, English, and German authorities was instituted.

I believe it is now generally admitted that division of these nerves in the neck arrests secretion in the stomach, but I have not found more than two allusions to a similar influence upon intestinal secretion, one in a paper by Sir Benjamin Brodie, and the other in Dr. Reid's essays. These will be considered hereafter. As to the immediate cause of arrest of secretion in the stomach, there appears to be great diversity of opinion. This will also be commented on subsequently.

The series of experiments which will be first detailed was instituted to determine how far section of the par vagum interferes with vomiting. The latest published experiments bearing upon this point, as well as the fullest

that I have met with, are those contained in the elaborate work of M. Schiff on digestion.

One set of his experiments would seem to prove that under certain circumstances vomiting can occur after the pneumogastrics have been cut in the neck. In these experiments, after such division of the nerves, M. Schiff introduced a stomach tube through an artificial opening into the cervical œsophagus, and passed it into the stomach. He then pushed through this tube, by means of a flexible piston, semi-solid food, of such a character as to be easily recognized. Out of 12 dogs subjected to this procedure, 7, after prolonged efforts, threw up a portion of the matters injected into the stomach.

M. Schiff does not appear to have tried whether, after section of the cervical pneumogastrics, it were possible to produce emesis by the action of ordinary emetics. He states, however, that when the nerves are cut below the diaphragm, tartar emetic causes efforts at vomiting as quickly as in healthy dogs, but that these efforts are rarely successful, or, if they be so, it is only after they have been very frequently repeated and long continued. His explanation of this is, that the division of the nerves prevents the co-ordination of the dilating fibres of the cardia and the associated actions of vomiting. The cardiac sphincter occasionally relaxes, but it does so, apparently, spontaneously, and without relation to the contractions of the stomach. So that if the opening of the cardiac orifice occurs at the same time as the expulsive efforts it is simply by chance. Successful vomiting is, therefore, dependent upon the fortuitous consentaneousness of complicated acts—which can happen but rarely. The function of the par vagum in this regard, then, according to this authority, is simply to harmonize the numerous acts necessary to successful vomiting.

First Series of Experiments.

Expt. 1.—Youngish mongrel hound. One hour after section of the pneumogastrics in the neck, the dog being strongly under the influence of sulphate of viridia, ½ gr. of the sulphate of veratria was given internally. Dog died in 30 minutes without vomiting or purging.

Expt. 2.—A good-sized Scotch terrier. One hour after section of the pneumogastrics in the neck, I gave hypodermically about ¼th grain of sulphate of veratria. Thirty minutes afterwards I administered ½ grain in similar manner. The animal died one hour and twenty-five minutes afterwards without being purged or having made any efforts at vomiting.

Expt. 3.—I cut the pneumogastrics in the neck of a stout poodle dog, and some time after administered hypodermically one half of a grain of sulphate of veratria. Animal died in fifteen minutes without any vomiting or purging.

Expt. 4.—I cut the pneumogastrics in the neck of a small Scotch terrier, and a few minutes afterwards gave hypodermically one-half of a grain of sulphate of veratroidia. Thirty minutes after this there had been no vomiting or purging. I gave ¼ grain additional after twenty minutes. No efforts at vomiting; no purging. Injected another quarter of a grain. Dog died about two hours after this without having purged or made any effort at vomiting.

I have used tartar emetic once, after section of the cervical pneumogastrics, without causing vomiting, but I do not attach any value to this experiment,[1] as I have failed to cause vomiting in the only two animals with

[1] This experiment is further vitiated by having been made with a rabbit, which vomits with great difficulty, if at all. M. Bernard says, I believe, not at all.

uninjured nerves to which I have given it. The experiments differ somewhat in their results from what is generally stated as to the action of antimonials, and I therefore insert them. They are, of course, too few to lead to any positive conclusion.

Expt. 5.—Full-grown English rabbit. Cut pneumogastrics 12.40 P.M. Gave 1½ grain tartar emetic in solution in both thighs—2¼ grains in all. 5.30 P.M. No vomiting or purging; no other symptoms except those of general prostration. Gave gr. ij elaterium in alcohol hypodermically. 6. P.M. Rabbit dying in a convulsion; for five minutes previously has had convulsive movements. In five minutes afterwards the animal was dead. No vomiting or purging.

Expt. 6.—Full-grown English rabbit suffering from injury to throat; has not eaten anything for two days, but running about pretty lively. Gave gr. ijss of tartar emetic at 4 P.M. hypodermically. 6 P.M. No vomiting or purging; rabbit weak. Gave gr. jss additional. Animal died between this and half past seven without vomiting or purging.

Expt. 7.—Nov. 9. Large female cat. 10 A.M. Injected into cellular tissue of thigh gr. j antimonii et potassæ tartras, dissolved in ʒj of water. No apparent symptoms were induced up to 5 P.M., except unusual quietness. Cat not under observation after 5, until 9 o'clock, when she was found in the agonies of death. There had been apparently some slight purging, but no signs of vomiting could be discovered.

Besides the already detailed experiments, ten others will be subsequently related, having a direct bearing upon this point. In eight of these, lethal doses of veratria failed to provoke vomiting after section of the nerves; in the other two, arsenic was used with similar results. These experiments, therefore, in every way confirm those of the first series. With the latter they are to my mind sufficient to prove that emetics will not act after division of the cervical pneumogastrics. In my experience arsenic has never failed to cause violent emesis when introduced into the circulation of an uninjured animal, and all authorities agree as to the constancy of its purging and vomiting, without regard to the method of its administration. As to veratria, it also always, in uninjured animals, produces violent, distressing, repeated vomiting; doing so in small doses even with more certainty, if possible, than arsenic.

That the non-occurrence of emesis is caused by the arrest of gastric secretion is, I think, demonstrated by the absence of watery fluid in the stomach on post-mortem examination, and by the absence during life of any attempts at vomiting, such as Prof. Schiff has shown to occur in animals with similar lesions, when food is injected in some quantity into the stomach.

It will be observed that nearly all the experiments which have been detailed to demonstrate the failure of emetics to act after section of the cervical par vagum, have direct bearing upon the question of the action of purgatives, since the most powerful emetics are at the same time purgative. In order to determine positively the relation between the nerves and purgation, the following experiments were instituted:—

Second Series of Experiments.

Expt. 8.—I cut the pneumogastrics of a large sized English rabbit at 4.30. Gave gtt. j of croton oil in emulsion in thigh. 4.45. Rabbit lively. 5.30. Rab-

bit quiet; moaning in breathing; no purging; passed some dry feces. Gave gr. ijss of gamboge dissolved in alcohol, injected in four or five different places in cellular tissue. 6.20 P. M. No purging or vomiting. Injected gr. ij resinæ podophylli dissolved in ʒss alcohol into peritoneal cavity. 7 P. M. Very weak, breathing quietly, not moving at all when touched. 7.30. Lying on side; breathing quietly, seemingly more conscious than at 7 o'clock; no purging; passed urine. 8. Tries occasionally to get on side but cannot. 9. Rabbit seems a little livelier. 10.45 P. M. Dying; only breathing three or four times a minute. Neither purging nor vomiting has occurred.

Remarks.—Not much importance can be attached to this experiment, as it is uncertain whether the same drugs would have purged the animal had the nerves been entire.

Expt. 9.—12.45. I cut pneumogastrics of a full-grown cat. Injected into peritoneal cavity gr. ijss podophyllin in alcoholic solution; into cellular tissue gr. j gamboge. 2.40 P. M. No purging. Injected into peritoneal cavity fʒij extr. sennæ fluid. 4 P.M. No purging. 6.10. Cat still alive, able to mew faintly; no purging or vomiting. 9 P. M. Still alive; no purging. Died during night without purging.

Remarks.—This experiment is open to the same objections as the preceding. I find podophyllin a somewhat uncertain purgative in cats.

Expt. 10.—3 P. M. Cut pneumogastrics of a dog and injected gr. iij podophyllin in fʒiss alcohol into peritoneal cavity; also gr. j gamboge dissolved in alcohol. 4 P. M. No purging, dog quiet. 6.10. Alive, heart acting pretty regularly though feebly; no purging or vomiting. 8 P. M. Dog just dead. No purging or vomiting.

Remarks.—It may be very well objected to this experiment that the dog did not live long enough for the medicine to act. I thought, however, on the whole, best to detail it. It certainly does not weaken the proof.

Expt. 11.—Nov. 14. Gave gtt. ij *ol. tiglii* to a moderate sized cat at 2 P.M. by mouth. 4 P. M. Cat has been vomiting pretty freely. 6 P. M. No purging. Nov. 15. Has been some purging during night, apparently two passages, one partially formed, and one not so—perhaps all one passage. Cat seems all right.

Expt. 12.—Nov. 10, 10½ A. M. I gave to a large female cat gtt. ij of *ol. tiglii* by the mouth. 12 noon. No effect yet visible. 1.30 P. M. Cat has been purging several times; very weak; trembling all over and perfectly quiet in corner; apparently suffering. 2.30. No purging since. 4 P. M. Has been free from purgation since; cat mews livelier. Nov. 11. There has been more purging in the night, but cat seems quite lively. Nov. 12, 9½ A. M. Gave cat gtt. ij *ol. tiglii* by the mouth. 12 noon. No vomiting. Cut pneumogastrics. 1.30. No purging; cat seems strong, but quiet. Nov. 13. Has been no purging. 12 A. M. Gave hypodermically gr. ss of *veratriæ sulph.;* cat previously was weak but pretty lively. 1 A. M. Cat dead; do not know exactly how long after injection; had urinated freely; no purging.

Expt. 13.—Nov. 14. Gave between gtt. vi and x *ol. tiglii* by the mouth to a large cat at 10½ A. M. 12 noon. Has been profuse vomiting but no purging. 2½ P. M. Has been more vomiting, but no purging. 6 P. M. No purging, but very profuse vomiting. Nov. 15. Cat seems recovered. Gave 10½ A. M. fʒj castor oil, of which she probably got about half. Cat vomited directly; no effect on bowel. Nov. 16, 10 A. M. Gave same cat a bolus containing gr. x extr. jalapæ. 1 P. M. No vomiting or purging. 4½ P. M. No purging. No purging during night.

Remarks.—I think the excessive vomiting will account for the croton oil not purging in this case. It was constant, immediate, very much more prolonged—more violent, with more effusion of liquid than in either of the other instances. It was probably dependent upon the very large dose.

Expt. 14.—Nov. 13. Gave to a male and female cat each five drops of ol. tiglii by mouth, at 9.30 A. M. 11.30. Both cats have vomited freely; tom cat purged once. Attempting to cut pneumogastrics on latter, he died from effects of ether. 12 A. M. Cut the pneumogastrics of female cat successfully. 1.30 P. M. No purging. 4 P. M. No purging; cat seems very weak. 9 P. M. Cat still alive; no purging. Nov. 14. Cat died some time during night without purging. There had been urination.

Expt. 15.—Nov. 19. Kitten apparently about three months old, gave, 10.30 A. M., ʒss *liq. potassæ arsenitis*, hypodermically. 2 P. M. Has been freely purging and vomiting. 2.45 P. M. Cut the pneumogastrics, and injected into cellular tissue ʒiss *liq. potass. arsenitis.* 3 P. M. Kitten seems suffering a good deal; very uneasy and restless. 3.10. Kitten very weak. 3.15 P. M. Kitten dead, without vomiting or purging.

Expt. 16.—Nov. 19, 3.5. Cut pneumogastrics of a large cat, and injected into cellular tissue ʒij *liq. potassæ arsenitis.* 3.15. No symptoms. Injected ʒj additional into abdominal cavity. 3.30. No especial symptoms; cat quite lively; no vomiting or purging. 4 P. M. Injected gr. j *acid. arsenios.* in water into peritoneal cavity. 5 P. M. Cat dead. No purging or vomiting.

Expt. 17.—Nov. 16. Gave a small spaniel by the mouth a bolus containing *extr. jalapæ* gr. x, *ol. tiglii* gtt. j at 2 P. M. Dog vomited the bolus twice in twenty minutes; each time it was given to him again; in about ten minutes more he vomited again, but this time no bolus could be found in the matters rejected. Nov. 17. Has been pretty freely purged during the night.

Expt. 18.—Nov. 17. Gave a moderate size cur a bolus containing *extr. jalap.* gr. x, *ol. tiglii* gtt. iss at 10 A. M. 11. No effects manifested. 12 noon. Has been free purgation; dog vomited directly after exhibition of dose, but did not throw up bolus. At 3.30 gave same dog *another similar bolus.* 4 P. M. Dog has not vomited since last dose. 4.30 P. M. Have just cut the pneumogastrics; dog came up from ether with great difficulty, but at 5 was able to walk. Nov. 18. Dog had no passage since operation. Nov. 19, 2.30 P. M. Injected by means of hypodermic syringe 1¾ fluidrachms of *liq. potassæ arsenitis* into cellular tissue. 3.10. The dog has had a firm passage since 10 o'clock; it possibly had been in the rectum ever since the nerves were cut; possibly was the result of secretion in the large intestines; no symptoms save general uneasiness. Gave in similar manner ʒijss additional. 4.15. No marked change in symptoms. 4.30. Gave gr. iss *acid. arsenios.*, injected into cellular tissue dissolved in water. 5 P. M. Dog still alive; no purging or vomiting. 9 P. M. Dog still alive; no purging. Nov. 18. Dog died during night without purging or vomiting.

Expt. 19.—Nov. 21. I gave by mouth to a large female cat a bolus containing 15 grains of *calomel*, at 4 P. M. Nov. 24. Cat has been purged, and vomited freely during the night. 10 A. M. Gave a bolus containing 15 grains of *calomel.* 2 P. M. Gave a bolus containing 10 grains of *extract of jalap*, and one and a half drops of *croton oil.* 3 P. M. Cut the pneumogastric nerves just one hour after last dose, five hours after the calomel. Neither bolus was vomited. Nov. 23. There has been no purging during the night, but apparently urination. 2.45 P. M. Injected by means of Wood's syringe gr. ijss of *arsenious acid* into cavity of the peritoneum. 3.20 P. M. Cat in pretty much the same condition as before the injection. 4.40. Cat still alive; no purging or vomiting. It being about two hours since injection of arsenious acid, time

sufficient to purge if it had the power, and wanting the carcass for dissection, I cut the carotids.

Expt. 20.—Nov. 25, 4 P. M. Gave 10 grains of *calomel* to a large male cat. Nov. 26. Has been purged pretty freely during the night. 9.30 A. M. Gave 15 grains of *calomel*. 12 P. M. The cat has vomited a small portion of the mercurial. Gave a bolus containing 2 grains of *podophyllin*, 1 drop of *croton oil*, and 10 grains of *extract of jalap*. 2.30 P. M. The cat has been purged very freely since last dose, once or twice. Cut the pneumogastrics. 6 P. M. Cat pretty lively; no purging or vomiting. 9 A. M. Still alive; no vomiting or purging. Nov. 26, 9 A. M. Cat died during the night without purging or vomiting.

Autopsy.—Small bowels strongly contracted, not much larger than a large goose-quill; almost semitranslucent; waxy; almost as white as white wax; bloodless, with a small amount of very thick mucus in their interior; mucous membrane very pale and white, with here and there reddish flecks.

Expt. 21.—Dec. 10, 4 P. M. I gave 10 grains of *calomel* to a kitten apparently six months old. 4½ P. M. Vomiting. 5 P. M. Seems better. Dec. 11. Vomited and purged freely once or more during the night. 10 A. M. Gave gr. x of *calomel*. 3.15 P. M. Has been purged once since last visit. Gave gtt. j *ol. tiglii* in a bolus. 3.30 P. M. Cut the pneumogastrics. 4 P. M. Cat seems pretty lively; no vomiting or purging. 6 P. M. About same; no vomiting or purging. 10 P. M. Still alive; no vomiting or purging. Dec. 11. Cat died some time during the night without any vomiting or purging.

Expt. 22.—Dec. 13. I gave 10 grains of *calomel* at 4 A. M. to a tortoise-shell kitten apparently six months old, perhaps older. Dec. 14. Kitten was purged very freely during the night. 10 A. M. Gave 10 grains of *calomel* in addition. 2.30 P. M. Kitten was purged since morning. Gave two pills containing each one drop of *croton oil* and two grains of *rhubarb*. Cat fought against taking them violently, chewed them up in her mouth, spit them out. We replaced the fragments several times, and she certainly swallowed equivalent to one pill. 2.45 P. M. Cut her pneumogastrics in the middle cervical region. 3.30. Cat seems pretty lively, walking about, fighting heroically upon attempting to seize her. 4.30. There has been no purging or vomiting since pneumogastrics were cut. Cat is weak, very quiet, when it walks staggering. Injected into the cellular tissue of the back a solution of *arsenious acid* supposed to contain one-sixth of a grain, may have contained more, certainly not less. 5. Seems about the same, still able to walk, although staggering and uneasy. There is no apparent disturbance of the respiratory function. 5.30. Cat able to walk; lies still most of the time; no vomiting or purging. 6. Seems better. 6.30. Attempted to inject ½ grain of *arsenious acid* into cellular tissue of back; cat flew into a violent passion thereat, bit, scratched, and behaved otherwise unseemly, so I was glad to let her go, with not more than a third the dose. 6.35. Cat running round the room wildly and stiffly, with head down; limbs and neck stiff; no vacillation in her gait; seems as it were convulsed. 6.45. Cat still in "tantrums." 6.55. Cat collapsed, nearly motionless; dying. Respiration for fifteen minutes has been markedly that of section of the pneumogastrics. No purging or vomiting.

Autopsy some time after death.—Stomach containing a quantity of thick, somewhat gelatinous, semitransparent, mucoid fluid. Small intestine contracted; nearly bloodless; empty; mucous membrane very pale.

Expt. 23.—Dec. 13. Gave 10 grains of *calomel* by the mouth at 4 P. M. to a black kitten, stout, vigorous, apparently nine months old. Dec. 14. Was purged freely during the night. 10 A. M. Gave an additional 10 grains. 2.40 P. M. Has been purging since morning. Gave a pill containing one drop of *croton oil* and two grains of *rhubarb;* swallowed without much difficulty. 3 P. M. Cut pneumogastrics. 3.30. Cat seems pretty well and strong, simply showing general signs of section of the par vagum. 4.30. Seems very lively; the marked evidences of respiratory disturbance have passed off. No vomiting or purging as yet since section of the nerves. Dec. 14, 10 A. M. Seems very

bright, running about as if nothing was the matter. During the night she has passed water freely, and I found a few shreds of fecal mucoid matter, not half a teaspoonful, at her tail, which is covered with the remains of previous purging. This probably was from the wet, moistening the dirty, matted mass. Gave hypodermically gr. ss *acidum arseniosum*. 10.33 A. M. Cat seems sick, but running about and drinking. Gave gr. ½ of the arsenic additional. 2.30 P. M. Cat about the same, seems hardly so ill as at 11 A. M.; no vomiting or purging. Gave gr. ½ *acidum arseniosum* hypodermically. 3 P. M. Not much change. 3 25. No vomiting or purging; cat very quiet. Gave gr. ¾ of *arsenious acid* hypodermically. 3.35. Cat dead, without vomiting or purging.

Autopsy five minutes after death.—Stomach empty; much of its mucous membrane swollen, and intensely dark red. *Small intestine.* Peristaltic action evident upon opening abdomen; excited very readily by pricking the gut; intestine empty; mucous membrane mostly pale, a little reddish in spots; everywhere very dry.

Expt. 24.—Dec. 15. 3.30 P. M. Gave to a stout cat a bolus containing one drop of *croton oil*, and directly after cut the pneumogastrics. 4.30. No purging; cat pretty well. Dec. 16. Has been no purging during the night; cat in good state. 2.30. Injected by means of Wood's syringe into cellular tissue, in four or five different places, 2 grains of *arsenious acid* diffused in water. 3.30. No new symptoms developed, save cat seems very quiet and weak. Injected 2 grains additional of the acid. 4 P. M. Cat very weak and sick, making some motions as though she would vomit, but really no vomiting or purging. 5 P. M. No change; no vomiting or purging. 9 P. M. Cat still alive; no vomiting or purging. Dec. 17. Cat died some time during the night. After 9 she had a single firm passage; this had apparently been formed, and then flattened by being laid on.

Autopsy.—Stomach containing considerable liquid; its mucous membrane excessively red and congested. Small intestine, containing in places some thick mucus, in others dry and empty; its mucous membrane in places somewhat reddened, in others normal.

Expt. 25.—Dec. 16, 3.10 P. M. Gave to a kitten apparently six months old, a bolus containing 10 grains of *calomel*, and ten minutes after cut the pneumogastrics. 3.30. Disturbance of respiration excessive, almost convulsive. Injected into cellular tissue gr. j *arsenious acid* in water. 3.45. Put 3 grains of *arsenious acid* on the cat's tongue, and washed it down with 8 grains of *gamboge* imperfectly suspended in an ounce of water; probably half of this was spilled. 5 P. M. Cat apparently much better, symptoms of disturbed respiration have subsided; no vomiting or purging. 9 P. M. Cat dead. No vomiting or purging.

Autopsy.—Stomach containing a considerable amount of watery fluid. Small intestines, in many places dryish, in others containing some thick mucus.

The experiments just detailed, taken in conjunction with those of the first series, seem sufficient to prove that purgation is impossible after division of the cervical pneumogastrics. As previously stated, the first two experiments of the series do not carry much weight, but experiments 10 and 12 are very conclusive. In 12, a cat, after free purgation has been produced by two drops of croton oil, the nerves being intact, receives again the same dose and in the same manner; two hours and a half are then allowed for absorption, and the nerves are divided; twenty-four hours afterwards, the medicines not having produced any effect, the animal is killed with veratria, dying without the stomach and bowels being excited to action. In experiment 13, two hours after the exhibition of a large dose of croton oil, when purgation had commenced in another animal to

whom the same dose had been given at the same time, the nerves were cut, and the animal died without purging. Experiments 15 and 16 were made with arsenic, which, according to all observers, vomits and purges always when given in lethal doses, without reference to its mode of exhibition. In experiment 15 a non-fatal dose of the poison had previously freely purged the animal. Experiment 17 was merely tentative, and proved that croton oil and jalap act as purgatives to the dog. Experiment 18 is a very decisive one. A dog receives a bolus of croton oil and extract of jalap, and five and a half hours afterwards, this having freely operated, receives a second similar one. An hour after this the nerves are divided, and nearly two days afterwards the animal is slowly poisoned by arsenic, and yet is not purged or vomited. Experiment 19 is apparently an *experimentum crucis*. A cat, previously purged with fifteen grains of calomel, receives the same dose, and four hours after this ten grains of extract of jalap and a drop of croton oil. An hour after this the nerves are divided. Purgation is not induced, although the animal the next day is killed by two and a half grains of arsenious acid. Experiment 20 is very similar to this, except that the second mercurial was aided by ten grains of the jalap extract, a drop of croton oil, and two grains of podophyllin, and purgation allowed to commence before division of the nerves, ceasing immediately upon this. No arsenic was used. At the autopsy the small bowels were found contracted, with simply a slight amount of mucus in their interior. Experiment 21 is similar, except that the mercurial was aided by croton oil alone. Experiment 22 differs chiefly in the use of about a third of a grain of arseniate of potash. In experiment 23 the results were not quite so positive, although I believe there was no purging during the night, and it is certain that there was none when the animal was killed the next day with arsenic. In experiment 24 croton oil was alone used at the time the nerves were divided, but the animal died of arsenical poisoning nearly thirty-six hours after this without purging. In experiment 25 calomel, gamboge, and arsenious acid failed to induce purgation after division of the cervical pneumogastrics, the kitten living some six hours after the exhibition of the mercurial.

The results of these experiments were pretty plainly shadowed forth, although not definitively proven, by the late Sir Benjamin Brodie, in a paper published in the *Philosophical Transactions*, 1814, p. 102. His experiments were only four in number, and were all made with arsenious acid.

In the first, ten grains of the acid were inserted into the thigh of a dog after section of the pneumogastrics in the neck, the animal dying in three hours and a half. The stomach and mucous membranes on post-mortem examination were found to contain no mucus or watery secretions—only food and feces. The mucous membrane of the stomach and intestines was found inflamed. The second experiment was in all respects similar to the first, except that the dog lived nine hours. In the third experiment two

ounces of a saturated solution of the white oxide of arsenic were given by the stomach, after section of the pneumogastrics, the dog dying three hours afterwards. The stomach and intestines are said to have been slightly inflamed, but to have contained no mucus or watery fluid. Sir Benjamin Brodie, in the fourth instance, divided the nerves just above the cardiac orifice of the stomach, and consequently below the origin of the pulmonary and cardiac branches. After the operation the respiration was perfectly normal. The dog was now inoculated in the thigh with arsenious acid. He died in a few hours with the ordinary symptoms of arsenic poisoning, except vomiting or purging. No watery or mucous fluid was found in the stomach or small intestine. A small quantity of mucus in the colon.

There are two sides to every question, and so far, in this study, we have seen but the one; there is, however, another.

Dr. John Reid, in his investigation of the pneumogastrics, repeated the experiments of Brodie, with, as he believed, opposite results.

His manner of experimentation seems to me to be somewhat faulty, although he claims that it is the only true method. He took two dogs in each experiment, one with the vagi entire, the other with them cut, killed them with arsenic, and then examined the intestines to see whether there was any difference in the amount of fluid contained, and on finding equal quantities, reasoned that there had been no arrest of secretion produced by the cutting of the nerves. Now, it is evident that if the uninjured dog had been purging freely, and the other not, the intestines of the latter might contain more fluid than those of the former, although secretion had been far less active. Especially is a doubt thrown over this method of experimentation, when it is remembered, in addition to the above, that it is wholly uncertain how much mucus was in the bowel of the dog before the section of the nerves and the subsequent poisoning. The experiments were five in number, and in only one (Expt. 40, Essay on the Pneumogastric Nerves) is it noted that diarrhœa was present after division of the nerves. Even in this it is barely possible there was some misapprehension, as the nerves were not examined at the autopsy to prove that they were actually cut. Still, it is most probable that this experiment gave an opposite result to those already detailed in this paper. All my experiments coincided, until over twenty had been made, when one occurred in which there was free purgation, and another in which there was some slight muco-fecal discharges after division of the nerves.

These experiments were as follows:—

Third Series of Experiments.

Expt. 26.—Dec. 15, 10 A. M. I gave by the mouth to a very large and powerful mongrel pointer 20 grains of calomel. 3 P. M. Has been vomiting and purging freely. Cut the pneumogastrics in the middle cervical region. The usual symptoms developed themselves. 5 P. M. Has recovered pretty well from the operation; no vomiting or purging since. Dec. 16. Dog quiet, although in pretty good condition. There has been no purging during the night. 10 A. M. Gave two boluses, containing together ten grains of *compound ex-*

tract of colocynth, two drops of *croton oil*, and five grains of *extract of jalap*. The dog swallowed them; of course they did not go fully down into the stomach, but, as they were soft, I conceive they must have melted and gradually been absorbed in the œsophagus, or found their way into the stomach. 2.25 P. M. There has been no purging or vomiting since 10 A. M. Have just given the dog 7 grains of arsenious acid, suspended and partially dissolved in about six drachms of water, injected into as many places in the cellular tissue of back and thighs. 3.30 P. M. Purged several times freely since 2.25; some very watery, some thick mucoid matter; some blood. I now gave 3 grains additional of arsenious acid in the same way as before. 4.30 P. M. Dog has purged once or twice since. Gave a solution hypodermically which had contained over two grains of veratria; some of the alkaloid, however, had probably been decomposed by a fungus growing in it. 4.45. Dog has exhibited most of the usual symptoms of veratria poisoning; had a single, very small passage from his bowels; profuse salivation; no vomiting; now lying on side, unable to stand on his feet. Dec. 16. Dog has purged freely during the night; is now dead.

Autopsy.—Stomach containing considerable fluid; its mucous membrane normal. Small intestine; its mucous membrane intensely congested; often markedly injected; the gut containing considerable fluid. Large intestine normal, except that it contains considerable liquid feces.

Expt. 27.—Dec. 15, 3 P. M. Gave by the mouth to a not very large, but very powerful and vicious male cat, 10 grains of *calomel*, and fifteen minutes afterwards cut the pneumogastrics. 5 P. M. Cat seems in good condition; no purging or vomiting. Dec. 16. There has been some purging during the night, consisting of very thick, gelatinous mucus, with a faint fecal tinge. 3.45 P. M. Poured into the mouth 6 grains of arsenious acid in dry powder, nearly all of which was swallowed. I also gave a bolus containing 1 grain of *podophyllin*, 5 grains *compound extract of colocynth* 2½ grains *extract of jalap*, and 1 drop of *croton oil*. How much of this actually found its way into the stomach it is impossible to state. A quantity of thick saliva and mucus came from the mouth, much of it very deeply coloured by the extracts. 5 P. M. Cat seems lively; no purging. Dec. 17, 10½ A. M. Cat still alive, but weak; there has not been any purging. Injected into cellular tissue a little over two drachms of *Fowler's solution*. 12¼ P. M. In about the same condition as two hours ago; no purging. 4 P. M. Just alive. There has been some mucoid discharge from the anus, just enough to wet the surrounding parts.

Autopsy.—Dec. 18. Stomach containing considerable watery fluid; mucous membrane normal. Small intestine, containing in considerable quantity a thickish, yellowish, mucous liquid; mucous membrane in places intensely injected and inflamed.

Speaking of the different results obtained by himself and Sir Benjamin Brodie, Dr. Reid says:—

"We cannot pretend to account for the discrepancy between the results obtained in the experiments detailed above and those related by Sir B. Brodie. It is possible, however, that Sir B. had not taken the precaution of securing a free ingress of air into the lungs in the three experiments in which the nerves were cut in the neck, for it is stated in the first experiment the breathing of the animal was laboured and it died after three hours and a half. . . . . Whatever be the cause of this discrepancy, it is obvious that the *negative* evidence obtained by Sir B. Brodie cannot affect the value of the *positive* experiments we have detailed."

Probably no words have been more misused in physiological reasoning, or, indeed, in scientific reasoning generally, than *negative* and *positive*. Negative in one sense, the results of Sir Benjamin Brodie, are in fact, but in a higher and truer sense, they are positive, just as much positive as those obtained by Dr. Reid. If a poison be introduced into the system,

possessing the power of invariably producing a fixed train of symptoms, and by any means such symptoms are prevented, the result is absolutely a *positive* one. Opposite results certainly were obtained by the different observers, but it is of no use to brand one as negative and pass it by. The true scientific sense will be awakened by such circumstances, not to ignore facts, but, if possible, to reconcile that which is apparently flatly contradictory. My experiments conclusively show that both observers were right, some of them agreeing with the one, some with the other. I think they are sufficient in number to prove absolutely that, after division of the cervical pneumogastrics, it is, in the majority of instances, impossible to purge, but in a few cases the normal action of the purgatives seems to be scarcely interfered with. The question is, Why is this? and the answer to this is evidently wrapped up in that of the question, How does the division of the nerves cause arrest of intestinal secretion?

It is, I believe, now generally conceded that section of the cervical par vagum arrests secretion in the stomach, and that, generally, the power of digestion is permanently destroyed. In certain instances, however, there is no such arrest of secretion in the stomach. This is precisely what I have found to be the case in the bowels, and it needs no elaborate argument to convince one that both depend upon a common cause, whatever that may be.

What then is this cause? To my mind but three plausible explanations presented themselves:—

First. The par vagum is possibly the direct antagonist of the contracting vaso-motor nerve of the alimentary canal, or, in other words, it is the dilating vaso-motor nerve of Bernard. This being true, it is evident that the cause in question is contraction of the capillaries after the section of the pneumogastrics by the unresisted contracting vaso-motor nerve, so as to prevent secretion.

Second. Shock.

Third. Accumulation of carbonic acid in the blood owing to the impeded respiration.

The former of these supposed causes is the one which first presented itself to my mind as very probably correct. The experiment of Bernard in which he cut the pneumogastrics of a dog, after having established a gastric fistula, has apparently direct bearing upon this point, for he found that the mucous membrane of the stomach instantly became pale and colourless when the nerves were divided.

The subject of the relation of the par vagum to digestion has attracted a great deal of attention, and in order to elucidate it, Magendie, Schultz, Bernard, Schiff, and others, have made numerous experiments. Several of these observers have many times cut the pneumogastric nerves just as they emerge into the abdomen from the diaphragm, and, therefore, after their cardiac and pulmonary branches have been given off. The results obtained

have been somewhat various, digestion sometimes continuing, sometimes ceasing; the best observers, however, agreeing that secretion generally continues. The discovery of Brachet, that many branches of the pneumogastrics pass through the walls of the œsophagus and were consequently unharmed by the various experimenters, apparently accounted for this. Especially did this seem plausible, when it was found that if the œsophagus with the contained nerves was divided gastric secretion ceased. The facts brought forward in this paper to show that there is an arrest of secretion in the intestine as well as stomach after cervical section of the pneumogastrics, seem in themselves, however, enough to invalidate the explanation of Brachet, for the small intra-œsophageal branches, which by increased activity were supposed to do the work of the whole nerve in the stomach, certainly do not reach the intestine. There is not wanting, however, more positive experimental proof of the falsity of this theory. Prof. Schiff has shown (*Leçon sur la Physiologie de la Digestion*, vol. ii.) that section of the œsophagus close to the cardia, the nerves being carefully dissected off and left uninjured, is in itself sufficient to cause the instant and permanent arrest of digestion; and has also modified the experiment of Magendie, Bernard, etc., so as completely to meet the objections of Brachet, and at the same time avoid the disordering effects of section of the œsophagus. His operation consists in cutting down upon the cardia in the usual way, exposing and dividing the anterior and posterior branches of the pneumogastric, and then seizing the œsophagus between the finger and thumb as close to the diaphragm as possible, rotating it, and at the same time carefully dividing it down to the muscular coat, which is left intact. In this way the nerves are all divided, and at the same time the œsophagus left practically unhurt. Prof. Schiff has repeated this experiment a number of times, always with the one result. He has assured himself, in the most positive manner, that there is no suspension whatever of digestion, even during the first twenty-four hours. Founding his opinion upon these experiments, he concludes that the arrest of secretion in the stomach is due simply to the disturbance of the circulation and respiration. At first this conclusion was not satisfactory to my mind, especially as I was slow to conceive how such disturbances could modify the action of the glands of the bowels. In order to satisfy myself whether the par vagum was a vaso-motor nerve or not, the following direct experiments were instituted. As a local stagnation in the circulation from capillary contraction would of necessity modify the rapidity of absorption, the first experiment was directed to discover whether section of the par vagum has any influence upon intestinal absorption.

Fourth Series of Experiments.

Expt. 28.—Very large powerful male cat, and much smaller female cat. Dec. 13, 11 A. M. Cut the pneumogastrics of the large cat. 2.54 P. M. Seems pretty well, but breathing noisily, and with slow, laboured effort. Without

giving an anæsthetic I opened abdomen in linea alba, and, exposing small intestine, placed in it a pill containing ¼ grain of strychnia. 2 minutes. No perceptible effect. 4 minutes. Cat apparently feeling the poison; standing erect with some stiffness. 7 minutes. Just seized with violent tetanic convulsions, in which he died. 3.5 P. M. Put smaller cat under the influence of ether; opened abdomen in linea alba, and placed a pill, in all respects similar to last, in small intestine. 2 minutes. No effect visible. 4 minutes. Perhaps some stiffness. 6 minutes. Marked tetanic stiffness of all the muscles. 8 minutes. Stiffness persisting, with constant convulsive shudders. 10 minutes. Same condition. 12 minutes. Cat dead, without any wild convulsions.

Remarks.—This experiment shows that it makes very little difference in the rate of intestinal absorption whether the pneumogastrics be entire or divided. The reason the injured animal died in the shorter period of time is probably not that absorption was more rapid, but that the breathing was already so much interfered with that death occurred from suffocation in the first convulsive paroxysm. The length of time from the administration of the poison to the appearance of the first symptom was as nearly identical as possible in the two cases.

Expt. 29.—Dec. 1st, 4 P. M. Cut pneumogastrics in the middle cervical region of a full-grown female cat. Exposed the small intestine; inserted a suture through it, and at the spot injected two and a half fluidrachms of the linimentum cantharidis into the gut, which instantly became deep red. I now replaced the intestine, and sewed up the wound. 5 P. M. Cat still living. Dec. 2d. Died some time during the night, without purging or vomiting.

Autopsy.—The small bowel was remarkably red, especially near point of injection. The colour was darkish rather than bright, but still marked. On opening gut it was found to contain a considerable amount of thick whitish mucoid substance. On washing the mucous membrane it was found not so red as the outside of the bowel, often pale, grayish ashy. In no place was there any injection of the mucous membrane.

Expt. 30.—A full-grown cat. Abdomen opened, suture inserted into the intestine, and ʒijss of linimentum cantharidis U. S. P. injected. During the night the cat got out of the box in which she was placed, and in the morning was found dead with bowels protruding. Small intestine a very deep red, both externally and internally; the epithelium of the inside had the same grayish ashy appearance noted in previous experiments. Bowels more intensely red than in Experiment 29.

Expt. 31.—Jan. 26. Under ether exposed and cut the pneumogastrics in the neck of an adult female cat. At 4 P. M. opened the abdomen and injected into the small intestine about two fluidrachms of linimentum cantharidis, in which two Chilian peppers had been soaked. At another place two Chilian peppers were introduced into the small intestine through a slit, which was then sewed up, and the bowels were replaced. 6 P. M. Cat seems pretty lively; no purging. Jan. 27. Died during the night.

Autopsy.—Small bowels nowhere very intensely reddened; in some places injected, containing a considerable quantity of a semi-fluid mucoid substance smelling strongly of turpentine, which probably was largely the injected material. There was no injection of the mucous membrane at the position of the peppers, although considerable blood, which almost certainly had oozed into the bowel from the cut.

Expt. 32.—Large female cat. Present Dr. McQuillen, Professor of Physiology, Philadelphia College of Dentistry, and Messrs. Dixon and Chaninel, office students. Etherized the animal and, after cutting the pneumogastrics in

the neck, slit open the small bowel opposite to its attachment to the mesentery, and applied a galvanic current of moderate intensity to the distal ends of the severed nerves. The colour of the mucous membrane of intestine changed from a pale whitish hue to a very decided reddish tint. The current was intermitted, and a fresh portion of the bowel on being exposed was found of the original pale colour. The current was then passed through the nerve again, and the mucous membrane again reddened. The current was again broken, a fresh portion of the bowel exposed, and again an increased redness followed a completion of the current. After this, however, the bowel failed to change colour, upon electrical stimulation. Dr. McQuillen, after the experiment was over, stated that he was thoroughly satisfied as to the change of colour in the mucous membrane of the intestine following the earlier application of the galvanism.

Expt. 33.—A large and old English rabbit. Under ether, cut down to the pneumogastrics and placed a string loosely around each, so that it could be drawn out of the wound at pleasure; at the same time the trachea was exposed and a tube inserted therein, for purposes of artificial respiration if required. Operation complete at 3.30 P. M., and the ether withdrawn. 4 P. M. The intestines were exposed by a median incision in the abdomen, through which the large bowel immediately protruded. It was laid open, the contained fecal matter removed, and the mucous membrane carefully washed with a soft sponge. After some minutes' exposure, the mucous membrane was decidedly red. The pneumogastrics were now pulled out of the wound and cut. In less than half a minute the bowel had become very decidedly pale; the change was marked, and persisted for fifteen minutes, when the animal was given what was supposed to be woorara, which produced in a short time violent tetanoid convulsions, and put an end to the experiment. No medical gentleman but myself was present. I asked my assistant—a very intelligent man—if there was any change in the bowel. He instantly replied, "It is of very much lighter colour." He knew nothing as to my expectations, whether there was to be any change, or, if so, of what nature.

Expt. 34.—Attempted to etherize a large cat, but had great difficulty in accomplishing it, and remarked to my assistant that I had never seen a cat resist an anæsthetic so long. However, she finally became thoroughly anæsthetized, and I cut down on the left nerve. At this time it was discovered we had been using *alcohol* for ether, so that complete anæsthesia had been produced by vapour of cold alcohol. The abdomen was now opened. Peristaltic action was completely suspended in the bowels, reappearing, however, readily when the galvanic current was applied to them. When left to themselves they were always relaxed, perfectly passive. The small bowel was laid open, and the pneumogastrics cut. No change was perceptible in the colour of the mucous membrane on division of the nerves. The distal ends of the divided nerve were now galvanized, at first with a very weak, afterwards with a much stronger current. Respiration was very sensibly affected, but no change whatever was perceptible at any time in the colour of the mucous membrane of the bowels.

Expt. 35.—Full-grown English rabbit. Under ether the pneumogastrics were exposed without cutting them. The abdomen was now opened and a portion of the small intestines drawn out. The animal was then allowed to lie for half an hour, the intestines being covered with a wet sponge, until the effects of the ether had passed off. The intestine was now laid open, and after four or five minutes a very mild induced current was passed through the uninjured pneumogastrics. At first no change; in two or three minutes darker points became apparent, and in five to ten minutes the whole intestine became markedly darker. After ten minutes the pneumogastrics were cut; the bowel, however, scarcely changed. My assistant said he could see no change whatever. I thought it became a shade lighter, but was not positive. Galvanizing of the distal ends of the cut nerves for some five minutes produced no change whatever in the bowel. The proximal end of one nerve was also galvanized for a couple of minutes without effect. The currents used were very weak, but suffi-

ciently powerful to influence respiration in a marked manner. No interference with the heart's action was apparent.

Expt. 36.—Full-grown English rabbit. Under ether cut down and exposed pneumogastrics in the neck without injuring them; then opened the abdomen and dragged out the intestines. I now waited half an hour until the effects of the ether had thoroughly passed off, and then slit open the small intestine opposite its attachment to the mesentery. There was some bleeding, but it stopped on the application of a little cold water. Five minutes after this a tight ligature was placed around each pneumogastric. This apparently caused great pain, and the animal struggled violently. In two or three minutes the nerve was cut. Owing possibly to struggles the bowel *reddened* very decidedly after section of the nerve, and it *continued so* after the animal became quiet. Five minutes after this we galvanized the proximal ends of the nerves with a mild induced current. For some time no change was perceptible, but afterwards the bowel became somewhat lighter coloured, and persisted so until experiment closed. The peristaltic action of the bowels was apparently not affected by section of the nerves being about equally active after as before. There was apparently some increase in its activity upon galvanizing the nerve, but this seemed more of a coincidence than an effect.

A careful study of these experiments will, I think, convince any one that there is no direct connection between the pneumogastric nerve and the abdominal circulation. Experiment 28 shows, as already stated, that intestinal absorption is not affected by division of the cervical par vagum. The 29th demonstrates that important changes can be produced in the intestinal circulation by local influences after division of the nerves. In the 31st experiment the reddening was not so marked but still was quite apparent. Experiments 32, 33, 34, 35, and 36, taken together, I think prove that neither division of the nerve, nor galvanization of either of the cut ends, has any fixed effect upon the intestinal circulation. In some cases there was some effect, but results were so often wanting, and when obtained were so often contradictory, that I have no doubt the changes in the colour of the mucous membranes were always either mere coincidences or were brought about indirectly, by the transmission of currents to other nerves, as has been shown to occur (Bernard, *Med. Times*, 1865, vol. ii.), or by effects upon the respiratory function, or upon the heart, or perhaps by exposure of the intestine, or in some other way, not readily discoverable.

Exactly how "shock" could cause a loss of power in the intestinal glands I do not understand, but it has suggested itself as an efficient cause. In order to test it the following experiments were instituted. They are not numerous, nor are they very decisive, but I think are sufficient to show that the intestinal effects of the division of the nerves cannot be accounted for by "shock" alone, although it very probably enters as one of the factors in the problem, and the sudden blanching of the mucous membrane of the stomach observed by Bernard was probably due to it. The experiments of Schiff upon division of the œsophagus corroborate the idea that "shock" has influence in the matter. As already stated, that observer found that cutting the œsophagus across low down was in itself sufficient to abolish gastric secretion.

Fifth Series of Experiments.

Expt. 37.—Etherized stout female cat, and by blows with the thick end of a heavy axe broke the thigh-bones of both hind legs completely, also the bones of the forelegs; in the latter there was a good deal of crushing, and from one considerable hemorrhage. 3.20. Cat has recovered from the ether; seems in good condition; administered hypodermically about gr. ss veratriæ sulphas dissolved in alcohol. 3.30. Making violent efforts at vomiting. 3.35. Vomiting violently. As the design of the experiment had been fully carried out, I now put an end to the animal's sufferings by a blow on the head with the axe.

Expt. 38.—March 1. At 3.50. P. M. tied the right carotid of a moderate sized cur. At 4 passed a ligature around the left carotid, without tying. 4.05. Dog has come out from under the ether to a considerable extent; tied the ligature tightly. 4.10. Dog sensible; perfectly quiet; immediately after the occlusion of the artery there was some stiffening of the muscles, and some apparently involuntary raising of the head; no convulsions. 4.12. Dog perfectly quiet; saliva dripping from mouth. Injected into cellular tissue of side about ½ grain of commercial veratria in alcoholic solution. 4.20. Dog very restless, with a constant suppressed howl or moan. 4.30. Dog shows some indications of sick stomach. 4.35. Quiet. Repeated the dose. 4.40. Howling violently, and continued to do so for fifteen minutes. No vomiting, or purging, or convulsions. 5. Wild; biting; trying to get loose. Gave hypodermically, gr. ½ commercial veratria. 5.15. Perfectly quiet; injected ½ grain of the alkaloid. 5.30. Quiet; considerable salivation: heart beats 75 per minute. Injected into peritoneal cavity gr. ½ of the veratria; immediately vomiting occurred without effort or straining a large quantity of partially digested food—a "puddeny" mass. Injected into cellular tissue of thighs gr. ½ of the alkaloid. 5.40. Dog rigid all over; body bent forward very much; emprosthotonos; limbs stiff. 5.43. Dog relaxed; no convulsion; making constant violent efforts at vomiting; retching; straining; vomiting "dry;" no mucus or fluid rejected. 5.47. Retching still continues; very violent; mostly without any results; occasionally a little thick stuff rejected similar to that first thrown up. Heart beat 36. 6.10. Still alive, but no more; no vomiting or no convulsions since last entry; sometimes an apparent tendency to convulsions; he appears to be below the convulsion state; at times apparently dead.

Expt. 39.—March 9. 2.30 P. M. Gave a large male cat a bolus containing arsenic 3 grs., compound extract of colocynth 7 grs., gamboge 2 and a half grains, croton oil one drop. 2.40. Administered ether, and 2.45 tied left carotid. 2.55. Put a ligature loosely around right carotid. 3.10. Cat pretty well recovered from effect of the anæsthetic; tightened ligature; respirations immediately became panting, exceedingly rapid, 150 per minute; expression of face wild, anxious; a constant low, suppressed moaning; head constantly moving from side to side with a sort of slow, rolling vibration. 3.15. Untied the cat. He made no effort to walk, but laid on his side, with the same constant motion of his head. 3.20. Breathing much more natural, not strikingly abnormal; when approached, cat shows desire to fight by spitting and growling, but makes no effort to get away or actually fight. Smart whipping has no effect on him; he will not attempt to rise or move forefeet save to alter their position slightly; when pushed forward with the foot he finally, however, rose and ran three or four steps and then fell, with limbs bent under him. There is some power in limbs, but great weakness as well as indisposition to move them. 3.35. Cat lying still, head erect; is roused with difficulty, but when finally pushed into getting up, can run quite well. 3.40. Cat pretty well, running about room some; no vomiting or purging. 4.30. Cat seems pretty well, but quiet, liking to creep into corners and cower there; has just vomited a considerable quantity of dark watery fluid, apparently discoloured by the compound extract of colocynth given some hours before. 5.30. No change; no more vomiting or purging. March 10. Still alive, and in pretty good condition. I am uncertain whether there has or has not been any purging during the night; certainly, if so, not more than a single passage; I think none. 10 A. M. Repeated the

bolus. 12 M. Still alive; no vomiting or purging. 1½. Died some time after last visit; there has been no purging or vomiting.

Expt. 40.—March 9. 3.35. Administered to a young cat, apparently some nine months old, a bolus containg 3 grains of arsenic, 7 grains of compound extract of colocynth, 2½ grains of gamboge, and one drop of croton oil. 3.40. Tied the external jugulars; produced no very marked symptoms. 3.50. Seems in good condition; howling loudly, and trying to get away. 5.33. No change; no vomiting or purging; cat howling. 10. Still alive. March 10. Cat died during the night; there was evidently free purging.

The question which next suggested itself for investigation was, Is the arrest of intestinal secretion after division of the pneumogastrics in the neck dependent upon disturbances in the respiratory function? That it cannot be owing solely or chiefly to the lessening of the heart's power, is evinced by the fact that purgation frequently does take place when by other means the heart's action is lessened much more than it is by the operation alluded to. That the latter does profoundly interfere with the lung functions and that after it there is during life a gradual accumulation of carbonic acid in the blood, admits of no dispute. Now, if it can be shown that such an accumulation is in itself sufficient to check secretion, a great advance will have been made towards the solution of the problem. The following experiments were therefore instituted. They are in two series. In the first, measures were adopted to more or less completely suspend the action of one lung, and then purgatives were administered. In the second, the action of the medicines upon animals exposed to an atmosphere loaded with carbonic acid gas was studied. It is evident that in the first set of cases "shock" entered as a possible factor, whilst in the latter it was altogether excluded.

In exposing cats to the gas an apparatus was used which commended itself by its cheapness, portability, and efficiency. An ordinary candle-box, with a sliding lid, was knocked to pieces, and its joints made tight by nailing them very closely and forcibly, with a strip of flannel between the boards. A pane of glass was set into the lid and a hole bored into the side of the box near the bottom. Into this a cork was placed which was fitted with a luted glass tube, such as the chemist frequently uses. Another hole was bored in the side near the top of the box at the opposite end to the first hole. A cork fitted this upper opening so that it could be opened or stopped at pleasure. The box was now connected by an India-rubber tube with a bottle or flask in which some carbonate of soda had been placed, and the apparatus only needed the addition of an acid to the latter to be in action.

Sixth Series of Experiments.

Expt. 41.—2¾ P. M. Pregnant cat. Made an incision on left side and forced a silver grooved director into and through right pleural cavity until it rested upon the vertebral column. Then inserted a tube in its place and pumped in air until cat was swollen like a drum. No bleeding of any moment. 3 P. M. Gave hypodermically about 2 grains of arseniate of potash. 4 P. M. No vomiting or purging; repeated operation; gave gr. j additional. 4.15 P. M.

Gave gr. j additional. 4.30 P. M. Gave 2 grains more of the arseniate. 5 P. M. Cat just purged once with some effort; very loose; not very large discharge. 6.15 P. M. Cat dead.

Autopsy 15 *minutes after death.*—Cellular tissue almost everywhere infiltrated with air. Stomach filled with frothy liquid. Right lung not cut; congested; in places very darkly and looking as though bruised; heavier than the other lung and less crepitant; not collapsed.

Expt. 42.—Feb. 4. 4.10. Made a free incision in a large male cat on the right side near the sternum down to the ribs, and cut obliquely through one of these, making an opening into pleural cavity sufficiently large to introduce the finger. 4.15. Right lung pretty well collapsed, ascertained by introducing finger. Breathing laborious. Passed a cord very tightly around the chest in two places, so as to completely prevent thoracic breathing. 4.20. Cat well recovered from effects of the ether. Injected in four places into the cellular tissue two grains of arseniate of potash in half fluidounce of water, and half a grain into peritoneal cavity. 4.30. No change in condition of the animal. Breathing laboured, deep, abdominal. No vomiting or purging. 5. No change. Cat has been able to howl some. No purging or vomiting. Gave hypodermically gr. $\frac{1}{8}$ of commercial sulphate of veratria in solution. 5.15. Cat apparently dying of suffocation. Cut the string binding the chest. 5.17 Revived, got up and walked some steps, tottering considerably in so doing. 5.25. Had a convulsion, leaping some six or eight inches backwards, three or four inches from the ground. 5.30. Gave hypodermically gr. $\frac{1}{4}$ commercial sulphate of veratria in alcoholic solution. 5.35. Just dead.

Autopsy immediate.—Heart still beating. Stomach filled with a little frothy liquid. Small intestines very dry, almost no mucus in them. Arteries and left ventricle full of black blood.

Expt. 43.—Feb. 11. 3.40. Put a kitten apparently eight months old, under the influence of ether, and divided the cord between the third and fourth lumbar vertebræ. Collapse of respiration came on immediately; the heart kept beating rapidly, but breathing ceased almost entirely, and the kitten was at one time apparently dead. Cold water was dashed against her face and she began to breathe again. 3.50. Kitten showing signs of consciousness; paralysis perfect in posterior portion of her body. 4. Able to pull herself with her forefeet, going round and round and round, with her hinder end for a pivot. Administered hypodermically one-sixth of a grain of commercial veratria. 4.10. Pulling herself forward; seems well and strong. Gave gr. $\frac{1}{8}$ as before. 4.20. No change; no vomiting. 4.25. Saliva running freely from mouth and some gagging; breathing excessively hurried, very shallow, thoracic. No vomiting. 4.30. No decided change; mewing feebly; good deal of salivation. 4.35. Breathing as before, exceedingly rapid, irregular, shallow, 160 per minute. No change; no vomiting. I was now forced to leave the animal to my assistant, who informs me she was seized at 4.40 with violent convulsions, which recurred frequently until her death, which took place at 5.30. No vomiting or purging occurred.

Expt. 44.—3.20. P. M. I made an oblique incision an inch long over the right lung near the sternum, cutting through the cartilages of two ribs, of an impure black and tan terrier. Immediately dyspnœa was very marked. There was considerable arterial hemorrhage, but not enough to seriously affect the animal. 3.25. By means of a Wood's syringe threw into the peritoneal cavity one grain of arseniate of potash, dissolved in a fluidrachm of water, and directly after 3 grains in six different places, in the cellular tissue of thigh, flanks, sides, and back. 3.25. I bound a cord tightly around the chest so as to totally suspend thoracic breathing. Very great distress and laboured respiration was the result. In about five minutes the symptoms of suffocation were so urgent that I thought I would have to take off the string, but they abated somewhat, and the string was not removed until just before death. The breathing was always exceedingly laboured and almost completely diaphragmatic. 3.34. Administered two grains additional of the arseniate of potash, dissolved

in water, injected into the cellular tissue in four different places. No vomiting or purging as yet. 4.10. No vomiting or purging as yet. Efforts at breathing very laboured. Dog evidently very ill. 4.30. No especial change in symptoms except dog apparently weaker. No vomiting or purging. 4.45. No vomiting or purging. Dog dying.

Autopsy immediate.—4.46. Right lung thoroughly collapsed. Heart still beating feebly and irregularly; distinctly two auricular to one ventricular systole. Left ventricle, aorta, and other arteries containing very dark blood. No bright aerated blood in the arteries. Intestines with the mucous membrane sometimes reddened; containing considerable mucus, but not enough to drop from them when cut, except perhaps in one or two spots; in some places dryish. Peritoneum contains considerable fluid.

Expt. 45.—Feb. 7. 4 P. M. Etherized a large male cat and exposed the ribs freely on left side; then made a long transverse incision into the pleural cavity, cutting through two ribs. 4.10. Cat having well recovered from the ether, gave him hypodermically one-sixth of a grain of commercial veratria dissolved in alcohol. 4.18. Bound a cord tightly once around the chest so as partially to suspend thoracic breathing. 4.25. Quiet. No vomiting or convulsions. Breathing very laboured. 4.30. Gave one-sixth of a grain of commercial veratria hypodermically. 4.35. Cat has had a formed passage from bowels, and appears to be making efforts at vomiting. 4.37. Vomiting. 4.40. Vomiting again. In this vomiting there has been little or no discharge from the stomach. No forcible pouring out of greenish fluid, such as is seen ordinarily in veratria vomiting. 4.48. String removed. 4.50. One-sixth of a grain additional given and cat placed in the carbonic acid box and the gas allowed to flow in freely. 5.20. No vomiting since being put in box. Still alive but unconscious. I now took him out and killed him with a blow on the head.

Seventh Series of Experiments.

Expt. 46.—Feb. 6. 3.15 P. M. Injected into the subcutaneous cellular tissue of a powerful male cat, one-half grain of commercial sulphate of veratria, dissolved in alcohol. The cat was then put into the box. 3.18. Struggling and fighting. 3.20. Lying on side perfectly quiet, with deep laboured breathing, 30 per minute. Taper goes out immediately when plunged in the box. 3.30. No change; no vomiting or purging. 3.35. Injected subcutaneously one-third of a grain of commercial sulphate of veratria. No vomiting or purging as yet. Salivation considerable but not nearly so profuse as generally under the influence of veratria. 3.40. Quiet; breathing deeply; somewhat rigid. Nothing at all like convulsions. 3.50. Cat died without vomiting or purging. Somewhat rigid. Died in an atmosphere in which taper was instantly extinguished.

Autopsy five minutes after death.—Stomach empty. Bowels containing a moderate amount of mucus. Peristaltic motion exceedingly active, more so than I remember ever to have seen it before; constant and active without stimulus; when intestine was cut across expelling the little contained mucus with violence through the cut.

Expt. 47.—Feb. 5. 12.35. Injected into cellular tissue of a powerful female cat, a little more than the eighth of a grain of commercial sulphate of veratria, dissolved in alcohol. Put the beast immediately into the box. 12.30. Taper goes out immediately in box, but cat struggling yet. 12.45. Has been lying perfectly passive on side for some time; breathing deep, laboured, 28 per minute; mouth open, tongue hanging out; pupils widely dilated; taper plunged in box instantly goes out. 12.50. No change. Salivation profuse, wetting every part of the box near the head; no vomiting. 12.55. Breath rate 26. No change; cat perfectly motionless save breathing. 1.15. No new symptoms or change. Atmosphere of box all the time containing sufficient carbonic acid to extinguish taper when brought into it. 1.20. No change. 1.25. No vomiting or purging as yet. No new symptoms. 1.30. No change. 2. No change. No vomiting. Salivation excessively profuse. Taper goes out. Injected into cellular tissue one-sixth of a grain of commercial sulphate of

veratria, in alcoholic solution. 2.15. No change in cat or air of box. 2.50. Gave hypodermically one-sixth of a grain of commercial sulphate of veratria. 3.10. Took the cat out of the box, where she had lain perfectly passive. 3.15. Cat in convulsions, unable to stand, but lying on her side. 3.20. Almost constantly convulsive, or at least constantly and paroxysmally, kicking into air; occasionally some opisthotonos, still a good deal of salivation. Pupils still widely dilated. 4.00 Constant convulsive movements. Still considerable salivation. No vomiting or purging. Pupils widely dilated. 4.30. Knocked the cat in the head.

Autopsy.—Stomach empty. Intestines empty. Arteries and left ventricle containing dark blood.

Expt. 48.—Feb. 7. Injected into the cellular tissue of a powerful male cat, by means of a Wood's syringe, $\frac{1}{4}$ of a grain of commercial veratria dissolved in alcohol, and immediately placed animal in the carbonic acid box 5 minutes before 4 o'clock. 4.15. Restless; paper burns feebly in the box. 4.20. Quiet; breathing labored. 4.25. Exceedingly restless, apparently in a convulsion. Carbonic acid gas now passing in more freely. 4.28. Quiet; breathing laborious, feeble; no vomiting, but a moderate amount of salivation. 4.30. Nearly dead; perfectly unconscious and relaxed. Dragged her head out of the box; mouth open, tongue hanging out, lips pale; pupils alternately dilating and expanding without any reference to the intensity of the light. 4.34. Revived, able to raise his head up, look about, and apparently make an attempt to bite; suddenly seized with a violent vomiting fit. Returned him immediately to the box, and allowed carbonic acid gas to flow in freely. 4.40. Quiet; breathing laborious. 4.45. lying on side, breathing slowly and laboriously, apparently perfectly unconscious; tongue out; a moderate amount of salivation. No vomiting since return to box. 4.48. Dead, without vomiting since return.

Autopsy, within five minutes after death.—Peristaltic movements of intestines exceedingly active; they being constantly vermicularly moving on exposure to the air, and a touch of the knife throwing them into all sorts of contortions and writhings. Intestines dry, containing no mucus. Stomach with a small amount of watery fluid.

Expt. 49.—Feb. 5. 11.15. Gave hypodermically to a large female cat $\frac{1}{8}$ of a grain of commercial veratria dissolved in alcohol, and put the animal immediately in box. 11.20. Breathing exceedingly laboured, deep. 11.30. Struggling violently, it was impossible to say with certainty whether convulsively or voluntarily; she kicked, doubled on herself, etc., violently in the narrow box. 11.35. Some violent struggles. 11.45. Opened box; cat appeared very much under influence, but still kept her head up. 11.48. Box lid has been entirely off for five minutes, and cat shows evident signs of coming up from her semi-asphyxiated state; taper burns freely at bottom of box. Cat just seized with sudden violent vomiting of greenish mucus. 11.50. Vomiting again violently. Took the cat out of the box and undid the cords that bound feet together; cat was able to walk pretty well. 12.30. In last half hour has vomited freely several times. 1.10. Injected into cellular tissue 3 grains of arseniate of potash dissolved in water, and put cat back in the box. 2 P.M. have been away; box wet all round head, cannot say certainly whether merely from saliva or from vomiting; has had a formed passage. 3. Convulsive seizures; has been quiet before, since 2 o'clock, in convulsions; muscles work disjointedly, often more twitchings than convulsions—often without movement of the limb. 3.10. Dead; no purging save a little fecal mucus, say a teaspoonful.

Autopsy.—3.20. Intestines deep red, containing a large quantity of mucus. Stomach full of frothy liquid. Heart not beating, not irritable to knife; left ventricle with dark blood, not absolutely black. Lungs pinkish, congested. Peristaltic motion of bowels marked 15 minutes after death, 10 after exposure to air; constant twitchings of muscles right behind thigh and leg, with occasionally jerking of the paw, continuing 25 minutes after death, 20 after opening thorax and abdomen.

In series No. 6, there are five experiments. In the first of these a lethal dose of arsenic produced some slight purging, consisting of but a single loose passage. It is evident that this was not nearly so great as should normally be produced by the drug. There can be little doubt but that I failed in this case to open freely the pleural cavity. The air which was pumped into the animal located itself in the cellular tissue and not in the pleural cavity, and the autopsy showed that the lung did not collapse. There was, it is true, a good deal of embarrassment of the respiratory function, just enough apparently to check, but not entirely to suspend the action of the intestinal glands.

In Experiment 42, suffocation was certainly a very efficient agent in producing the death of the cat. The blood after death was everywhere highly carbonized. During life there was no purging or vomiting, although both veratria and arsenic were freely administered. Experiment 44 is very similar, and in every way confirmed the preceding. It differs only in the circumstance that arsenic only was used.

Experiment 43 is chiefly interesting in confirming, as far as it goes, the others, and in showing that veratria may produce convulsions even when it is prevented from vomiting. The shock caused by a section of the cord manifestly, however, prevents much reliance being placed on the experiment as proving that an interference with respiration is an interference with intestinal secretion.

In Experiment 45 an apparent contradictory result was obtained, yet the vomiting was by no means so severe as it normally is, after the use of such doses of veratria. There is no certain gauge in such experimentation as to how far the lung function is interfered with, and it seems to me that as there was an actual diminution of the gastric action of the poison, the results obtained really strengthen rather than weaken the testimony of the other experiments. The amount of respiratory disturbance was certainly not so great as in some other cases, and the vomiting was entirely checked by a carbonic acid atmosphere.

The experiments of series No. 7 are even more decisive and reliable in their testimony on the influence of an excess of carbonic acid in the blood upon gastro-intestinal secretion, since the equation is reduced to its simplest form.

In Experiment 46, a cat, kept in an atmosphere loaded with carbonic acid gas, receives hypodermically nearly a grain of commercial veratria, and dies 35 minutes after receiving the first $\frac{1}{2}$ grain without vomiting, and on opening the stomach and bowels, they are found in about a normal condition.

In Experiment 47, two doses of veratria, $\frac{1}{6}$ of grain each, are administered, and the cat is kept profoundly under the influence of the gas; no vomiting whatever occurs. Twenty minutes after the last dose and about two hours and a half after the first $\frac{1}{6}$ of a grain, the cat is taken out of

the box, but never sufficiently recovers to be able to stand, or for her pupils to become natural. After severe convulsions she is killed, and the stomach and bowels are found empty.

In Experiment 48, a cat, into whom $\frac{1}{8}$ of a grain of veratria has been injected, is kept in an atmosphere loaded with carbonic acid, and shows no signs of vomiting. He then is allowed to breathe fresh air, and as soon as he comes pretty well out from under the gas, vomits violently. On his being thrust back into the box, the vomiting ceases and does not recur. At the autopsy the stomach contains but a small amount of liquid.

Experiment 49 is very similar to the last. So long as the animal is strongly under the influence of the gas the veratria fails to provoke secretion and vomiting, which, on the other hand, appear just so soon as the effects of the carbonic acid pass off. A lethal dose of arsenic failed to produce any purging, although at the autopsy a considerable amount of mucus was found in the intestine, showing that secretion had to a certain extent been excited. The explanation of this, I think, is to be found in the imperfect narcosis produced.

The experiment, although placed near the last in this series, was in reality the first made, and I had not learned the best way of managing the apparatus, and did not keep up the necessary steady flow of the gas. That the narcosis was not complete was shown by the pinkish colour of the lungs and the partially arterialized blood found after death in the left ventricle.

The experiments of these series seem to me, when studied one with the other, to prove conclusively that an excess of carbonic acid in the blood is capable of lessening, and when carried beyond a certain point of altogether preventing, in most instances, emesis and purgation. In doing this, the poison does not merely arrest the muscular movement necessary to the performance of those acts, but actually arrests secretion. This is proven by the results of post-mortem examination, for if secretion continued and peristalsis was checked, there would be an accumulation of fluid in the stomach and bowels such as is said to be seen in certain cases of cholera.

Moreover, I think the experiments already detailed afford proof that the peristaltic action, although in some cases apparently checked by the anæsthetic, is not necessarily so. To aid in elucidating this point the following experiments were instituted:—

Eighth Series of Experiments.

Expt. 50.—Feb. 7, 3 P. M. Placed in the box a large female cat, pregnant, and let carbonic acid flow in freely. Died in about twenty minutes.

Autopsy within five minutes after death.—Opened her abdomen first. Peristaltic action of the bowels absolutely wanting; bowels relaxed, perfectly motionless. When pricked with a knife a local persistent contraction took place, forming a depressed constricted ring around the bowel. Pricking gave rise to no true peristaltic motion whatever. The constrictions spoken of sometimes lasted full two minutes, perhaps more. After between five and ten minutes' exposure to the air, peristaltic action commenced to appear. The cat was then thrown

out doors, where the temperature was probably about fifty. Fifteen minutes afterwards the peristaltic movement was exceedingly active, the bowels worming and writhing spontaneously.

Expt. 51.—Feb. 5. Without in any way injuring it, I placed a young cat, apparently about a year old, in the carbonic acid box. After it had lain there about half an hour perfectly unconscious, I threw into the box a very rapid stream of carbonic acid gas. Kitten died in about 20 minutes.

Autopsy five to ten minutes after death.—Heart not beating but starting and beating a few strokes when vessels were cut across, and the blood choking it was allowed to escape. Blood everywhere very black. Peristaltic action of the intestines very evident, but rather sluggish. Some spontaneous movements on exposure to the air, and a certain, but rather slow and feeble response to pricking with the knife.

The experiments which have bearing upon the question of the influence of carbonic acid gas upon the peristaltic action of the intestine are then Nos. 46, 48, 50, 51. In the first of these the cat had been for half an hour in an atmosphere so loaded with carbonic acid that a taper, when brought near the box, was extinguished before it entered it from above, and dying in such an atmosphere, was examined immediately. In spite, however, of the everywhere present black blood, the intestines exhibited the most active peristaltic motion I have ever witnessed, constantly and rapidly writhing and twisting over one another. In Experiment 48 the exposure to the gas was not so prolonged, but it was, if possible, more intense, and the cat died, I believe, chiefly of suffocation, and here again peristaltic action was very active. On the other hand, in Experiments 50 and 51, the cats were undoubtedly killed solely by the gas, and in the former there was absolute abolition of the vermicular movements until after the exposure of the bowels to the air for fifteen minutes, and in the other the peristalsis was sluggish, although evident.

Putting these results together, I do not see how any other conclusion can be arrived at than that already mentioned, namely, that lethal poisoning with carbonic acid gas does not in all, or even the majority of cases, completely suspend intestinal movements.

The whole of the experiments, therefore, prove that carbonic acid gas in excess in the blood has the power of arresting intestinal secretion.

It seems well established by the facts and arguments previously adduced, that the failure of purgatives after cervical section of the par vagum, is not owing to any direct influence which the nerve exerts upon the intestine. That section of the nerve is followed by accumulation of carbonic acid in the blood is also well known. Taking these facts with the influence of the gas upon intestinal secretion just proven, it appears to be a logical inference that the impossibility of vomiting or purging after division of the nerves, is due to the accumulation of carbonic acid in the blood. My experiments with the gas, however, showed that in order for it to produce absolute arrest of secretion it must be in sufficient quantity to manifest very plainly its presence by other than gastro-intestinal symptoms, such as more or less complete unconsciousness.

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Now after division of the pneumogastrics in the neck, the gas does not accumulate, at least until near death, sufficiently to do this. It is therefore evident that there must be some other cause or causes aiding it in controlling secretion.

"Shock" has already been shown to be a probable adjuvant, but is apparently not the only one. For its influence would scarcely endure, or, if it did, would diminish rather than increase, while the resistance to the action of emeto-cathartics mostly steadily persists until death takes place, mayhap several days after division of the nerves.

In those experiments in which the pleura was opened there was a similar arrest of secretion without profound carbonic acid narcosis.

It therefore being probable that there is some cause for the symptoms besides those enumerated, the question naturally arises—Is there any lesion to be found which, existing in a marked degree both among the results of cervical section of the pneumogastrics, in collapse of the lung from wounds, and in profound carbonic acid narcosis, is capable of acting efficiently in restraining intestinal secretion? Such lesion I conceive is the great interference with the circulation in the lungs, which occurs in each case, and, of course, backs the blood upon the right heart, then upon the portal circulation, and hence tends to prevent intestinal gland action by producing a more or less complete local capillary stasis. This, then, I believe to be a third agency in aiding the arrest of secretion in the bowels after division of the cervical pneumogastrics. That it is not the sole cause is evinced by the previously detailed experiments upon intestinal absorption, which prove conclusively that there is no absolute cessation of circulation in the intestines after the operation.

In conclusion, the results of this protracted study of the subject may be summed up as follows:—

First. The division of the cervical pneumogastric does, in the majority of instances, but not always, absolutely arrest free gastro-intestinal secretion, emetics and cathartics being absolutely powerless to produce it.

Second. That this arrest is not due to any direct influence which the nerve has upon the intestine or its circulation, but is owing to two or three causes: accumulation of carbonic acid in the blood, interference with the circulation of the lungs backing up the blood upon the portal circulation, and perhaps shock.

These things being granted, the opposite results obtained by Brodie and Reid are readily explainable.

It is well known that in a small proportion of cases division of the nerves does not induce the changes in the lungs ordinarily so fatal. In such instances there is no great accumulation of carbonic acid in the blood, nor is there any backing up of the blood in the pulmonary artery, and consequently upon the right heart, and finally portal circulation.

The secondary results of section of the par vagum—the actual causes of

the arrest of gastro-intestinal secretion—are therefore wanting in these cases; and I believe it to be in such that emetics and cathartics act freely after division of the nerves. The rarity of such cases is the reason why those experiments are proportionately so few, in which such drugs act in their ordinary manner after the operation.

ART. X.—*Vesico-vaginal Fistules. Comparative Analysis of different Surgical Methods. Results, American and European.* By NATHAN BOZEMAN, M. D., of New York.

To illustrate by clinical facts the legitimate surgery of the female genito-urinary organs, and to criticize operations, that hide without removing the evils against which they are directed, are the aims of this communication. It is a reply to Dr. Gustave Simon, Professor of Surgery in the University of Heidelberg,[1] in deference to whose claim of priority in the operation of Kolpokleisis (transverse obliteration of the vagina), we begin by withdrawing our own, made in 1867. It happens, however, that historical documents, overlooked by us both, attribute to French surgeons the initiative in question.

In 1845, A. Bérard,[2] after mentioning Vidal's occlusion of the vulva in 1833, says with regard to incurable vesico-vaginal fistules:—

"I modified this method by incising the mucous membrane at the entry of the vagina, and dissecting up a cuff-like fold about two centimetres long, round the free border of which I passed a thread (as in Dieffenbach's purse-string suture). The ends of this thread I drew with a catheter through the fistule into the bladder and out of the urethra, puckering the fold of mucous membrane at its bleeding surface; then I faced the raw surfaces of the vagina below with three points of quilled suture. The urine still trickled through two minute fistules, at the patient's death some weeks later, from pleuritis and peritonitis."

Kolpokleisis here was not less completely effected than in the first operations recorded by Prof. Simon.

Bérard also cites Velpeau's treatment of a vesico-vaginal fistule, complicated with atresia vaginæ, as in Margaretha Hubert's case, the first in which Prof. Simon attempted kolpokleisis in 1855. Velpeau had failed to complete this closure with the actual cautery and suture, and the urine still dribbled away, as after Prof. S.'s two "doppelnaht" operations and repeated cauterizations. M. Lenoir had attempted to obliterate a vagina, otherwise normal, below the seat of a fistule. He had cauterized, with

[1] See his letter to the author in the Deutsche Klinik, Nos. 45 and 46, 1868, translated into the American Journal of Obstetrics, vol. ii., No. 2, 1869; and also translated into English, and circulated in pamphlet form, by Prof. Simon.

[2] Dict. de Méd., vol. xxx. p. 495.

the hot iron, a complete circle of its walls, had applied the tincture of cantharides for their farther refreshment, and introducing a curved wooden tube into the previously dilated urethra, and a larger one into the rectum, had, by drawing their outer ends together, forced the two raw surfaces of the vagina into contact, and so held them, with a view to their adhesion, but this manœuvre failed of its object.

A vesico-vaginal fistule having resulted from abuse of pessary in one of Dupuytren's observations, spontaneous atresia of the vagina had ensued below the fistule, and the catamenia were voided through the bladder. Carteaux had published another case like this, consecutive on a tedious labour.[1] Such were the facts, in view of which Bérard practised kolpokleisis at la Pitié, as above shown, to remedy a large loss of substance in the vesico-vaginal septum with hernia of the bladder into the vagina. He refreshed the surfaces with bistoury and scissors, but used the purse string and quilled sutures. Up to the 21st day the operation seems to have been an almost complete success, and the patient's death was due to other causes.

"The reason," says our illustrious brother of Heidelberg, "why I have proved the validity of my claims of priority at such lengths, is simply this, that in my opinion kolpokleisis is the most important plastic operation which in the last decennia has originated from one single man. The operation of vesico-vaginal fistula by uniting the borders of the defect is indeed, in its present perfection and precision, a much more important acquisition than kolpokleisis and probably the greatest achievement of our century in plastic surgery; but it has not been carried to that perfection by a single man, but, on the contrary, operators of all nations have contributed their share to it. The "uranoplastic" of our ingenious countryman—von Langenbeck—could alone be placed by the side of kolpokleisis, as far as the safety of the performance and its immediate success are concerned. It would rank higher still on account of its more frequent occurrence, if its benefit for the voice in increasing its purity could be secured in all or in the majority of cases. But as in many cases this result is not obtained at all and in others only incompletely, kolpokleisis must be considered the more important operation, as in all cases it fully answers its purpose. This operation which I invented at the time when the obliteration of the vulva, proposed by Vidal, proved inefficacious in reëstablishing continence of urine, has already been performed more than fifty times with complete success. Through it many patients with incurable defects of the bladder have been freed of the most intolerable suffering, viz., the incontinence of urine. I have myself succeeded in eighteen cases in effecting perfect obliteration, and every German surgeon who practises the art of curing vesico-vaginal fistules, has recorded one or more successful cases of that kind."

In the autumn of 1858, a young negress, Jane F., aged 20, entered our private Infirmary at Montgomery, Ala., for the treatment of two fistules, one vesico-, the other recto-vaginal, the results of extensive sloughing the year before, and due to the usual cause, the pressure of the child's head in prolonged labour; for this distressing accident levies its tribute of suffering at the portals of maternity, and the primipara is, for obvious reasons, as in the case before us, its most frequent victim. On her first admission, she was operated upon by our former partner, Dr. J. B. Gaston, but without success. She came under our personal care January 1st, 1859.

Examination revealed the loss of the whole vesico-vaginal septum, with half the urethral portion of the vagina, leaving the pubic arch bare, $\frac{1}{2}$ or $\frac{3}{4}$

[1] Journ. de Lucas Championnière.

inch on either side of the symphysis, while above, the cervix uteri had lost its infra-vaginal portion. The immobility of its borders, as well as of the womb itself, forbade any compensation for the loss of substance, by drawing down the womb to close the opening. The recto-vaginal fistule, two fingers in size, was oval, with its long axis transverse, and lay 2½ inches from the anus. At its lower border a hard unyielding band spread across the posterior vaginal wall. The lower border of this fistule became gradually mobile by dint of incisions and of dilatation, until it allowed coaptation of its refreshed edges beneath the button-suture, which completely protected them from the urine as it poured into the vagina through the large hole in the base of the bladder. Removal of the suture apparatus on the 8th day revealed complete closure of this fistule by union of its edges. To close the other chasm was impossible. By what operation might the distressful flow of urine be prevented? Already in a case analogous to this we had closed up the vulva, like Vidal, but found little advantage from that. The point in question was to convert the remains of the bladder and vagina into one common cavity. This object we effected by paring the anterior vaginal wall up to the corresponding border of the fistule and round to an equal extent upon the lateral and posterior walls. These raw surfaces were then buttoned together in a transverse line, and the vagina closed up to the fistule, thus leaving no pouch for urine below and avoiding that most serious objection to Vidal's operation of closing the vulva by an antero-posterior line of union.

Drs. Gaston, Norton, and other physicians, witnessed our transverse occlusion of the vagina in this case, with eight wire sutures, and a button 1¾ inches long, which, when removed on the 9th day, left the atresia complete. This was March 15, 1859, and from this time the patient retained and passed her water at will; it never dribbled away unless she neglected to void it for many hours. She lay dry all night without having to get up, and could walk about for three or four hours at a time without wetting herself. These advantages have been in great measure maintained during eleven years. We had frequent good reports of her during the first four; at the ninth she was in health and doing all the housework of a family. Dr. R. P. Means, of Hickory Grove, Alabama, has just seen her and replies to our questions as follows:—

"Jane Finley is living and her general health is very good. She can retain her urine while walking about sometimes, but it occasionally dribbles. If when lying down she immediately answers the call to urinate, she can retain the urine long enough to get up and go out doors. She does not complain of any pain, but says that she used to retain her water much better soon after the operation on her than she can now."

It seems then that Time is growing envious of our success in the first only case of transverse obliteration of the vagina on our record, a case remarkable too as the first now living, in which complete occlusion was effected in the urethral portion of a vagina of normal dimensions, and after utter destruction of the vesico-vaginal septum. This result was obtained by a single operation with our button suture. Its record may be found in the January number of the *New Orleans Medical and Surgical Journal* for 1860. Full details of it were in the printer's hands when that Journal was suspended at the breaking out of the war. We at that time regarded it as unique and our method as original. Two cases mentioned

by Dr. Sims in 1858[1] present, however, some analogous points. In the first, a part of the bas fond of the bladder had been destroyed along with the infra-vaginal cervix, and Dr. S. had united the vaginal walls about an inch above the urethra. This case would tally well with Prof. Simon's second topographical division of kolpokleidic operations.

In Dr. S.'s second case, only a small part of the neck of the bladder remained attached to the urethra. The mouth of the vagina was closed by uniting its posterior wall to the urethra as they lay in contact, leaving a pouch ¾ of an inch deep below the anterior border of the fistule, in which urine might stagnate and stone accrete, the same evils as result from Vidal's method.

In either of these cases the only complication arose from the loss of the infra-vaginal cervix. In one, the whole trigone remained intact; in the other, a part of it. The integrity of the urethra invited the soldering of the anterior borders of these fistules to the cervical stump by the button-suture, well known here at the time when Dr. Sims operated on them. With his clamp-suture, on the other hand, it would have been impossible to hold the two borders together long enough for union to be effected. This upper clamp would have rested, in the first case, across the stump of the cervix, on a plane far above the lower clamp which would have been imbedded in the soft tissue of the vagina, above the root of the urethra, a position compromising the success of the operation. In the second case, his upper clamp would have occupied the same position across the stump of the cervix, but the lower one would have been thrown directly across the root of the urethra; the womb could not then have been drawn and kept down long enough for closure of the fistule by union with its anterior border. The constant drag of the depressed womb upon the front clamp would have strangulated the tissues, and their slough would have left a mutilated urethra with a fistule much enlarged. If confined to the use of the clamp-suture, then, Dr. Sims' expedient became inevitable.

Prof. Simon's case, Maria B.,[2] presents a vesico-vaginal fistule as big as a cherry, high up in a normal vagina. Upon this Prof. S. operated often in vain, sometimes trying to close the fistule with his doppelnaht; at others, to obliterate the vaginal canal. At last he succeeded in closing the fistule, a result surely preferable to kolpokleisis for the patient, since the question for her was, vagina or no vagina? On the other hand, the surgeon's reputation could not suffer from success, however tardy, in his first and legitimate object. The first kolpokleisis completed in Germany appears to have been made by Prof. Wernher, of Giessen, who has recently imparted to us its instructive though sinister details, and the discovery of a stone in the vaginal pouch after the death of the patient.

[1] Silver Sutures in Surgery, page 16.

[2] Ueber die Operation Blasenscheiden fistelndurch die blutige naht, p. 5, 1862.

This was the eighth kolpokleisis in Germany previous to our own operation in 1859. One of the eight was operated by Prof. Roser, of Marberg; the six remaining cases were Prof. Simon's. Let us now endeavour to fix the rational limit of application for this method of transverse obliteration, to which Prof. S. attaches so much value. Let him speak:—

"Since the invention of kolpokleisis, however, I have not remained satisfied with that mode of operation, to which you still adhere. On the contrary, I have constantly laboured to perfect the method of operating; to multiply its chances of success, in the different parts of the vagina, and to render its indications more precise. Whereas I had, in my first cases, operated only in the lower parts of the vagina, and had repeatedly met with small remaining fistules which could not be brought to heal, such occurrences are now extremely rare, and I close, as the case may be, in any height of the vagina, and always immediately below the defect. Nay, in one case, where the fistule was high up in the fornix, I needed only one-half of the latter for the obliteration, thus preserving the vagina in its whole length. (See my *Beiträge zur plastischen Chirurgie*, Prag. 1868, fol. 216.) Moreover, whereas I used to consider kolpokleisis indicated only where very large defects existed, I have now limited this indication a good deal, having cured at later periods very considerable defects by uniting the borders of the wound by sutures, like these (⌒, T, ⅄, $\bar{⅄}$), by resorting to incisions along the sides and parallel with the sutures, and even by transplanting a flap from the vesico-vaginal wall. The size of a defect has, for the reasons enumerated, during the last five or six years not been in my eyes an indication for kolpokleisis. On the other hand, I have found among the large number of difficult and complicated cases which have come under my treatment, several in which it was either impossible, or too dangerous to unite the borders, so that here I resorted to kolpokleisis."

Here are his rules laid down for guidance in kolpokleidic operations, distinguished topographically[1] in three classes:—

1. Obliteration of the vagina in its urethral portion.
2. Obliteration of the vagina within the limits of the base of the bladder from the root of the urethra to the cervix uteri.
3. Obliteration of the vagina at the fornix, transversely, if the fistule be very large; oblique, if small and high up on either side the fornix.

His indications for kolpokleisis[2] are:—

1. Great loss of substance, making it impossible to bring the sides of the fistule together.
2. Inaccessibility of fistules, from their high position, from the inversion of their edges, &c.
3. Loss of infra-vaginal cervix and danger to peritoneum.
4. Hemorrhage into bladder, if severe, after operations.
5. Confinement by adhesions of the stump of the cervix uteri, inside the bladder, so that the catamenia escape through the urethra.
6. Atresia vaginæ above fistules, involving their posterior border, so that its orifice communicates between the vagina and bladder.
7. Atresia of urethra with one fistule above and another below.
8. Uretero-vaginal and uretero-uterine fistules.

Prof. S. remarks the greater difficulty of closing up the urethral portion of the vagina.

[1] Beiträge zur Plastischen Chirurgie. Prag. fol. 216, 1868.

[2] Op. cit., p. 229.

Very curious is his treatment of uretero-vaginal fistules (*harnleiter-scheidenfisteln*). He makes a new fistule near the mouth of the womb, then obliterates the vagina just below the false passage between it and the ureter. This converts the upper part of the vagina into a pouch for the menstrual fluid, and for the urine of one kidney with a passage to the bladder through the small artificial fistule. No less novel is his management of the uretero-uterine fistules (*harnleitermutterfisteln*), which he claims to have met with. Here he closes the vagina higher up and just under this newly-formed fistule, so that the urine of the ureter implicated passes from the cavity of the womb through the cervical canal, and reaches the point of closure, whence the artificial fistule conducts it into the bladder. The menstrual discharge takes this same course. These operations both prevent impregnation and partially mutilate the vagina.

But most novel and startling of all is Prof. Simon's statement that the contact of urine is not prejudicial to the uterus nor to its menstrual function, that the confinement of urine in the vagina is innocuous, and the condition of patients with closed vaginas is satisfactory!

Calculi, says he, are not apt to form if kolpokleisis be complete. He attributes to an overlooked suture-knot, which served as nucleus, the only case of stone that he has met with.

These peculiar physiological views prepare us to appreciate the "cure" of eighteen patients, 17 per cent. of all his cases, by the closure of their . . . vaginas.

More than thirty other interdicts of this long suffering organ have been placed, as he tells us by other German surgeons, among them, Roser, Wernher, Wilms, Ulrich, Bardeleben, Wagner, Esmarch, Spiegelberg, and Hegar.

The details of these thirty cases not having been cited, we reserve our judgment concerning the expediency of the operations, and confine our remarks to Prof. Simon's.

Our attention having been turned to the treatment of vesico-vaginal fistules in 1853, the same year, it seems, that Prof. S. took up this subject, and having before the interruption of our female practice by the war and its consequences, in 1860, put on record forty-one cases, our opinions have not been hastily formed, and we feel it our duty to protest against the latitude of Prof. S.'s indications for condemning the passage of the vagina.

What is vesico-vaginal fistule? A solution of continuity, maintained in the vesico-vaginal septum by the passage of urine, the contact of which is a chief obstacle to the process of healing.

In what does the cure of a fistule consist? In the union of its edges without serious lesion to the functions of the bladder, vagina, or uterus. No result inferior to this is a true cure, however complete the continence of urine. This physiological standard should never be lost sight of in our

choice of remedial methods. What is kolpokleisis? The conversion of the vagina into a urinal, with prevention of the sexual act and generative function, restricting the uterus to the part of an excreting organ. Per contra, it claims to obviate the incontinence of urine.

Of Prof. Simon's eight indications for kolpokleisis, we recognize as valid only the first one, viz., a loss of substance such as to prevent the coaptation and consequent union of the fistulous borders.

No loss of substance can prevent a cure so long as the womb can be drawn down to fill the aperture. In cases where this seemed impossible at first, it has gradually yielded to our daily tractions with polypus forceps on the cervix and stretching of the surrounding tissues, until the two sides of the fistule would meet. This once effected we feel confident of cure by our button-suture. Since its invention we have never had recourse to incisions, in order to relax tissues and take the strain off our sutures, as Jobert was so much in the habit of doing, and as Prof. Simon, after condemning it, has been fain to practise likewise. Even when a force of several pounds had been needed to bring the sides together, our button-suture has always sufficed to maintain them in apposition until their complete union. Incisions we apply only to the preliminary treatment of cicatricial bands, or to points of atresia, which, after opening, we dilate with tents, not attempting to close the fistule until we have removed, as far as possible, such obstacles.

All Prof. Simon's indications precited, except the first, have been met and overcome in our practice, without having recourse to kolpokleisis. At "uretero-uterine" fistules, indeed, we may place a point of interrogation, for their diagnosis does not appear to us well founded in the cases stated. Bérard describes such a case in full detail. He injected coloured fluids into the bladder, he introduced a probe into the cervical canal, and another through the urethra, so that it should strike the first, if a fistulous communication existed. He measured separately the fluid escaping from the vagina, and what escaped from the urethra; he smelt what escaped from the os uteri. Now such means may aid in ascertaining the existence of a vesico-uterine fistule, but they cannot determine whether the communication between the uterine cavity and the urinary apparatus occurs at a point beyond that of the normal contiguity of these organs. A fistule $x + y$, of track unknown, may exist; the precited means of diagnosis may fail to prove it vesico-uterine; they cannot, however, prove it uretero-uterine, and we have seen vesico-uterine fistules in the diagnosis of which they failed, because of the extreme smallness of the fistulous track and its valvular condition. We have been unable to pass a coloured fluid through it from the bladder in quantity sufficient to be seen in the cervical canal; nor could we pass a probe, however delicate, in the same direction, yet the two streams of urine, one from the vagina, the other from the bladder, always flowed separately. Was this a proof that the urine of the vaginal

stream came from the cavity of the womb? Post hoc, ergo, propter hoc, will not answer here, as the linen test has frequently attested in our hands. By this test we have detected the precise situation of a passage between the bladder and the cervical canal, even when the fistule was too small to be seen by the strongest reflected light. In one case cured by us January 1869, the point of communication with the cervical canal was near the internal os and the fistulous track above, bounded only by the utero-vesical fold of peritoneum; this membrane was punctured while operating, but no serious consequences ensued. Here, even when the cervical canal was fully dilated, a strong reflected light failed to reveal the fistulous orifice, although while the patient lay upon her back, the urine flowed freely from the os externum. Now on mopping dry the cervical canal, and laying a bit of old linen on its anterior wall, its saturation showed at once the orifice at that point, by closing which we cured the patient.[1] No organ was injured, no function compromised by our operation.

A patient has recently come to us with a rent of the urethra half its length back from the meatus, and a small vesico-vaginal fistule, the remains of a large one thus far closed by Dr. Emmet, of the New York Woman's Hospital. The anterior lip of the cervix had been soldered to the root of the urethra by three operations with the interrupted silver suture. The womb was retroflexed, and the cervical canal, patulous, was about an inch from the urethral orifice and on a lower plane. The cicatricial tissue resulting from these previous operations had to be removed, after which we closed the vesico-vaginal fistule by our first button-suture. Nearly all the urine still escaped through the split urethra and in the dorsal position; much ran back upon the anterior surface of the vaginal patch, formed by the cervix uteri, and so into the cavity of the womb itself. We closed the urethral rent at a second operation and restored control over the urine by mechanically raising the cervix above the urethra. Then she could retain her water very well while lying down, and tolerably when standing or walking. On removing the supporter, the cervix would drop again and the urine resume its course into the womb. In the knee and elbow position the urine was seen to flow from the cervical canal and we mopped out the cavity of the womb. This might have been supposed to be a uretero-uterine fistule, and had the urine not been seen running back into the cervical canal while in the dorsal position, its escape from the os uteri might have been attributed to a fistule either between the cervix uteri and bladder, or between the cavity of the womb and one of the ureters. That neither of such channels existed was proven by plugging the urethra and mopping the cavity of the womb. But had there been a small vesico-uterine fistule high up, with this patulous state of the cervix, the urine escaping into the latter would have reached the cavity of the womb, and the true fistule, escaping observation, might have been deemed uretero-uterine. Then the only way to get at the truth would have been to plug the os internum and to ascertain positively that no vesico-uterine fistule existed, which we can do by the linen test, and not otherwise, in our ex-

[1] For the *linen test*, see our more extended notice in the Transactions of the New York State Medical Society, p. 154, 1869.

perience. The removal of the plug from the os internum would have let the contained urine escape and so proved the existence of a uretero-uterine fistule.

Of uretero-vesico-vaginal fistules we can speak from sufficient experience, having in 1856 adopted a simple and effective treatment, and since then found such fistules little if at all more troublesome than the common vesico-vaginal. Paring the end of the ureter implicated, we thrust a pointed blade ¼ of an inch up, and piercing it as well as the vesical mucous membrane, split them both down to the edge of the fistule. This gives the urine a fall into the bladder far enough from the united edges of the fistule, and leaves in the line of union the whole thickness of the vesico-vaginal septum. Were the fistule simply uretero-vaginal, the first step would be to convert it into a uretero-vesico-vaginal passage by incising the vesical mucous membrane. A uretero-vesico-vaginal fistule was brought to us for treatment a few weeks ago by the wife of a physician from the State of Kentucky, and was operated upon by us in presence of Prof. Boeck, of Christiania, Norway, and Drs. Lee, Jones, Richardson, and M. J. Moses, of this city.

Incarceration of the cervix uteri within the bladder is regarded by Prof. S. as an indication for kolpokleisis. In several such cases presented to us we have always disengaged the cervix and closed the fistule, restoring to the catamenia its natural outlet.

Atresia of the vagina above the fistule indicates, says Prof. S., that we should close the vagina just below it, leaving the fistule open between the bladder and the diverticulum, thus formed by the two obliterated points of the vaginal canal. Has the surgeon no better resource than this blind imitation of Nature?

In 1860 Dr. Faget, of New Orleans, placed under our care Madame B., of that city, who had a small vesico-vaginal fistule in the trigone, with atresia vaginæ between this and the cervix so nearly complete that only the smallest probe could pass. More than an inch of the canal was imperforate. This we partially reopened before attempting to close the fistule, but we could not succeed until we had completely dilated the vagina; then control over the urine was restored, and our patient six months afterwards became pregnant.[1]

In the annals of surgery, nay, even in those of psychology, we have met with nothing more astounding than Prof. S.'s assertion, by a gentleman of Prof. Simon's rank in our profession, that, after effecting kolpokleisis, the urine becomes healthy and does not harm the uterus, when we consider the deep pocket formed in the vagina with no other outlet than the small fistule into the bladder. These fistules, moreover, are very often found at the highest point of the vaginal pocket, thus favouring the retention of urine, which at every menstruation will be mixed with the blood of this

[1] See New Orleans Med. and Surg. Journ., July, 1866.

eliminative secretion, an admixture which can hardly fail to promote decomposition and its irritative sequences. Would Prof. Simon attribute then, to the vaginal mucous membrane, the property of arresting fermentation, of preventing those well-known changes which urine undergoes when long confined in the bladder, forming earthy deposits, calculi, and acrid ammoniacal lixivia?

In the academic discussion of Jobert's elytroplastic cure, Gerdy, who found it difficult to believe that a piece of skin adherent with a mucous membrane could bear with impunity contact with urine, said, "We know, indeed, that urine has the property of irritating, inflaming, ulcerating, and striking with gangrene whatever it touches, the vagina itself cannot become accustomed to it."

Velpeau remarks,[1] "When the fistule gives passage to urine continually, the vagina, the vulva, and the thighs, bathed in this irritating liquid, are inflamed, excoriated, and become the seat of cutting pains, sometimes of pustules and of ulcerations which at first aspect might be supposed syphilitic. The lips of the wound gradually become hard, callous, and thickened." What was the final result of kolpokleisis in the first complete success obtained by transverse obliteration of the vagina in Germany? Its operator, Prof. Wernher, of Geissen, replies to us December 12th, 1869, "My patient died last summer. At the autopsy, I found in the vagina above the seat of closure, a stone as big as a pigeon's eye." This completes the history.

Between Prof. Wernher's case and ours there is a difference in character, which explains the difference in results after periods of twelve and eleven years respectively.

In the first case a partial atresia preëxisting had been completed below the fistule by Prof. W., thus converting the vagina above the line of obliteration into a pouch for the retained urine. The accretion of stone which occurred here is a probable event in Dr. Sims' two cases, and in all that have this anatomical character. In our own kolpokleisis, on the contrary, we obliterated the remaining urethral portion of the vagina up to the anterior border of the fistule, leaving no other pouch above than that formed between the posterior vaginal and the superior vesical walls, with the urethra at the most dependent portion of the same, and the cervix uteri at the most elevated. Such are the conditions that expose least to retention of urine and to irritation of the genital organs.

The same objections apply in some measure to the practice of folding the cervix uteri and edges of the fistule inside of the bladder, as often done by leading surgeons. The vagina is here narrowed only in sections, and not necessarily incapacitated for its functions, but pouches are formed in

[1] Leçons Orales, t. ii. p. 242.

the bladder. Several calculi, after such operations on the vagina, have been reported by Dr. Emmet, who advises vaginal lithotomy in connection with vesico-vaginal fistula.[1]

"We have seen the existence of calculi in the bladder cause perforation of the septum. The formation has generally been subsequent to the operation for the closure of a fistula, through which means the nucleus has been furnished, and a pouch in which the stone first became encysted."

As a stone in the bladder may occasion a fistule by the ulcerative absorption of the vesico-vaginal septum, so may another fistule be occasioned by the pressure of a stone in the vagina after its occlusion, or else the adhesions may give way below at the point of occlusion, a result not improbable after complete kolpokleisis during many years. Under our treatment at this moment is a fair example of Nature's kolpokleidic operations, in which, after having covered up and hid away old lesions, she has left the parts in a state analogous to that of surgical obliteration. The results before us teach what are to be expected from the latter, and confirm the previsions of pathological chemistry.

Mrs. ——, of ——, Alabama, aged 23, a perfectly well-formed woman, after a first labour of eighty-four hours, March 31, 1865, lost by sloughing part of the lower third of her vagina, which, on healing, left a small urethro-vesico-vaginal fistule, and a recto-vaginal fistule higher up, with loss of control over the passage of either urine or feces. Under this persistent local irritation the vagina just below the urinary fistule continued, however, to contract, enfolding both fistules until by degrees she had regained control over the excretions. Her general health improved, but eighteen months after the first injury, and in the fourth month of a second pregnancy, she miscarried. Cystitis soon after set in, with a profuse discharge of bloody mucus. Five or six days of such painful inflammation continued, recurring at intervals of three or four months. It seemed to be provoked by the exertion of standing or walking too long. Still menstruation remained normal and general health fair, with increased retentive power. By the end of the third year her vagina seemed completely closed; she lay dry all night, and could be around in the day for several hours at a time without dribbling. But now came a change for the worse. Upon over-exertion she became conscious of a fulness, as though something in the lower part of the vagina was pressing to come away, with urging to micturate every few minutes. This trouble increased until it culminated in an attack of cystitis. The urine, now always turbid, deposited a thick, tough slime, and smelt very strong after standing a little while. A year ago fatigue in nursing a friend brought on a severe attack, and which continued a whole month. The sanguinolent, or brown turbid and offensive character of the urine has continued from that time with variations in degree up to the present date, at which we find it largely mixed with pus. During the past year her health has suffered much; she has become excessively nervous and her menstruation painful. A deep seated pain is assigned to the left ovarian region, and soreness is complained of over the whole abdomen. Since last autumn the flow has lasted but two days, and the epochs been retarded eight or ten

[1] Treatise on vesico-vaginal fistula, p. 217, 1868.

days. Excruciating lumbar pains coincide with the cystic exacerbations at intervals of only eight or ten days. She has repeatedly swooned from their severity and remained for hours unconscious. This unrelenting march in the gravity of her condition produced a state of anguish which, without positive derangement of mind, still urged towards suicide, but in this contention of spirit wiser counsels happily prevailed, and she has sought from the resources of surgery a salvation to which Nature has proved inadequate, although she had effected complete kolpokleisis, *"that most important plastic operation which, in the last decennia, has originated from one single man"!!!*

Actual state, March 10th, 1870.—The vagina admits only a No. 6 bougie. The urethra is closed half an inch from the meatus. The vulva is much excoriated with scalding on passage of urine, which has been the case from the first. Attempts to dilate the vaginal stricture cause extreme pain.

Preliminary Operations.—Our first indication being to restore the vagina, we proceeded after etherization, assisted by Drs. T. C. Finnell and J. H. Hinton, of New York, to cut deep into the cicatricial band, from ½ to ¾ inch thick along its sides. Then we incised the posterior wall, introduced our speculum, and exposed the vagina above, which was deeply congested and dotted with little red spots over its anterior wall. A small urethro-vesico-vaginal fistule was brought into view just within the point of vaginal occlusion, and admitted a No. 4 bougie. The vaginal surface for nearly an inch above this point was studded with granulations that bled at the slightest touch. The neck of the womb was much enlarged and its mouth patulous. Pus escaped with the urine through a catheter in the bladder. We all three verified the purulent character of this discharge. The recto-vaginal fistule was reopened by our dilatation of the vagina. We shall reopen the urethral passage, and then close, first, the urethro-vesico-vaginal fistule; afterwards, the recto-vaginal fistule. Spontaneous atresia of the vagina had here restored continence of urine by drawing the small fistule up into the cicatricial band. The vaginal muscles could then aid the sphincter vesicæ in controlling the flow of urine through the urethro-vesical and vaginal orifices almost in juxtaposition. The urine, however, flowing into the vagina, had attacked its mucous membrane and the cervix, as betrayed by their congested, hemorrhagic, and patulous state. Endometritis and ovaritis had supervened upon the cystitis and vaginitis. The discharge of muco-pus tinged with blood is now about ½ a pint in twenty-four hours. The subjoined analysis by a highly competent person, Dr. Wm. B. Lewis, of this city, was made on a specimen of the urine drawn at the last exacerbation of our patient's cystic trouble, which occurred a few days after the operation precited.

"*March* 18. Odour: pungent, aromatic. Colour and appearance: reddish, densely turbid. Sediment after standing: ⅛ bulk of specimen, rather close, but light, of a brownish-white colour. Reaction: alkaline. Specific gravity: 1025. Earthy phosphates completely precipitated from supernatant fluid, but chlorides abundant. Albumen: ¼ of the whole volume. Microscopical: oil globules, minute crystals of triple phosphates, pus corpuscles, amorphous urate and epithelium from the bladder. No casts were found. If present they would be discovered with great difficulty, as the strongly marked chemical characters of the specimen cloak the organic sediments and render their microscopical characters indefinite.

"The objects discovered by the microscope are in great part such as are naturally observed in alkaline urines. The features of this specimen indicate

that the cystitis from which the patient suffers is largely due to retained urine and pus. The large proportion of the latter accounts for the albumen present.

We should state here while the general character of the urine in this attack remained the same, as observed by the patient for months before this preliminary operation, there was marked amelioration in her sufferings. Only for a few moments at one time was the pain as severe as to cause swooning. The paroxysm was much shorter than usual, lasting only about two days, but the flow of mucus and pus continued the same as formerly, though diminished in quantity."

The patient's good constitution and the conservative reactions of her organism during the earlier stages of her traumatic malady, its continued and vigorous efforts for self-recovery, more frequent in ratio to the local irritation, in short, the whole picture before us confirming and elucidating the pathologic history, forbids us to attribute the decline of health or sympathetic sufferings to other than hydraulic and chemical causes, viz., the stagnation of urine retained in contact with mucous surfaces unprepared to resist its irritating salts, and whose exudations of protective mucus have but increased the mischief by accelerating putrid fermentation. To open a free passage for discharge of these morbid secretions is the first step dictated by experience towards removing their causes.

We do not exhibit the foregoing as anything more than the particular application of a general principle. Lesions apparently the same occasion different degrees of suffering in different patients. European, and especially German peasant women, may be more robust, more phlegmatic than our American women, but chemistry and mechanics are invariable. To their laws are due the fearful sufferings we have witnessed in case of spontaneous kolpokleisis, and we venture to suggest that if the luminaries of German surgery will descend from their Olympian heights, look up their kolpokleidic cases and look into them again, they will see cause to change the note of triumphant gratulation with which Prof. Simon announces his successful operations.

ART. XI. — *Traumatic Tetanus.* By CHRISTOPHER JOHNSTON, M. D., Professor of Surgery in the University of Maryland.

IN offering the notes of two cases of traumatic tetanus treated successfully by conia used hypodermically, we would not claim for that agent a specific virtue; but we desire to show the more than coincidental subsidence of tetanic symptoms under its employment, and to recall attention to the effect of conia as antagonistic, or at least antithetical, to the symptoms of tetanus. Thus the tetanic spasm of the muscles is that of rigid tonic and constant contraction, never completely yielding in intervals during its progress, and finally giving way, if ever, just previous to the fatal event, or more rarely, by far, under the influence of remedies so

various and opposite, that no other than the general treatment can be definitely expressed. Conia, on the other hand, according to the authority of Christison,

"acts on the spinal marrow, prostrates nervous power, producing paralysis of the voluntary muscles, and kills by arresting respiration. In an animal poisoned by conia the senses are preserved as long as it breathes, while the heart continues to beat even after apparent death, and its action may be maintained for a time by keeping up artificial respiration.

Conia, if used in poisonous doses, produces vertigo, nausea, faintness, a sensation of numbness and muscular debility; it acts as a mydriatic, causes difficulty of speech, delirium or stupor, tremens and paralysis, and ultimately occasions convulsions and death."

More recent observers, however, express themselves at variance with the views of Christison. Thus Guttmann says that on the stomach and intestines hemlock has scarcely any influence. It may produce nausea, vomiting, and diarrhœa, but such occurrences are not common.

In a case of conia poisoning in the human subject, observed by H. Bennett, and in all the experiments of Guttmann on frogs, there was produced gradual paralysis of the voluntary muscles, and then of those of respiration. But later observers arrive at these conclusions:—

1. The paralysis is certainly not due to the action of hemlock on the muscles. 2. Neither does hemlock paralyze by its effect on the spinal cord. 3. The first action of conia is upon the terminations of the nerves, yet after a time the trunks are themselves paralyzed. But the sensory or afferent nerves remain unaffected.

Schroff states that in a short time after the poison is taken the sight is dimmed and the pupil dilated; and in Dr. Bennett's case there was total blindness, but the hearing was but little, if at all, dulled.

Finally, Dr. Sidney Ringer, from whose *Handbook of Therapeutics* we extract the above summary, remarks that this remedy is not indicated in convulsive diseases dependent upon affections of the cord, such as tetanus and strychnia poisoning, for the effects of this medicine and the diseases just mentioned are not antagonistic. Thus Guttmann strychnized frogs, poisoned them to paralysis with conia, and yet failed to check in any degree the tetanic spasms produced by the strychnia.

In this last experience Guttmann seems to be borne out by the researches of Dr. A. Crum-Brown and Dr. Thomas R. Fraser on conia and its ammonium bases. These authors are of opinion that "normal conia" should be devoid of spinal action, although the hydrochlorate of methyl-conia paralyzes the motor nerves and the spinal cord, and Morson's conia produces complete paralysis of the motor nerves before or after complete paralysis of the reflex function of the cord, according as the dose is small or large.

Before proceeding further we would call attention to the fact, in opposition to the statement of Guttmann, that the sensory nerves remain unaffected in conia poisoning, that in the first of our cases treated with conia

hyperæsthesia existed during an entire month. And we find in Guttmann's paper the reason for his failure to arrest strychnia tetanus by the employment of conia in poisonous doses even. That author, as already quoted, believes that hemlock does not paralyze by its effect on the spinal cord, while Harley's experiments show that strychnia acts on all parts of the spinal cord. The inference is, therefore, conclusive, that conia is powerless before strychnia; but Guttmann's generalization with regard to "Tetanus" is manifestly inconclusive. It is true that idiopathic tetanus, the prognosis in which is for the most part favourable, resembles the tetanus of strychnia in some particulars, especially in the probable seat of its force; but there is also acute traumatic tetanus, so fatal that neither O'Beirne, nor Hennen, nor Dickson, nor Morgan, ever saw an instance of recovery from it. To this latter variety of tetanus we oppose the third conclusion of Guttmann, namely, that the first action of conia is upon the terminations of the nerves, and eventually the trunks themselves are paralyzed.

From what has preceded we have ventured the conclusion that conia may be regarded not only as an agent probably curative of acute traumatic tetanus, but also as a means of differentiation between the natures of the two chief forms of the affection.

The pathology of tetanus is still involved in great obscurity.

> "Tetanus may be an irritation of a peculiar kind affecting the excito-motory apparatus, the irritating cause being either eccentric without or centric within the spinal canal. It may be regarded as an exaltation of the polarity of the cord and medulla. Or, it may be identical with inflammation of the spinal cord and medulla oblongata."

It is, therefore, neither surprising that contra-pathic or hetero-pathic remedies should offer sufficient temptation for a trial, nor that marvellous power should be claimed for particular agents associated with the recovery of tetanic patients. When the rigid limbs relax, when the bent spine becomes limber, when the almost fixed thorax heaves in the respiratory act, when the jaws yield and the pharynx resumes its part in deglutition, it is natural—almost consequential, that to the drug, or other means directed towards a cure, should be accorded its full measure of merit as an antitetanic. And yet, the diversity of circumstances under which patients have recovered, has served rather to confuse than to enlighten or guide the pathologist. Of course, autopsy alone can determine the pathology of the affection.

Perhaps one reason for the variance among therapeutists is their occasional or frequent neglect to disassociate the idiopathic from the traumatic variety of tetanus. And this error, whether practical as applied to actual cases, or unpractical as appearing in the relation of cases, is fatal to progress; and is the more to be regretted when occurring among practitioners, whose contributions to pathology must necessarily be extremely

sparse, the opportunities for autopsic investigation in private practice being very rare.

In connection with the successes and reverses of treatment in tetanus as influencing the direction of future attempts, it may not be amiss to advert to the great fatality which attends some forms of the affection, and the recovery that, in a certain other, almost constantly justifies the prognosis. However much improvement may be desired in the treatment of the latter form, it is especially in the former that most need exists of a clear pathology and an enlightened medication. Consequently the profession has almost exhausted its resource of tonics and relaxants in the several methods of treatment recommended.

"Each and all have had their advocates, inasmuch as recovery has taken place after their use, and the disease has been considered to be checked in consequence."

Mr. Poland (Vol. I. of Holmes' *System of Surgery*, 2d edition) says:—

"In the *idiopathic variety*, where it does not assume an acute and rapid form, the prognosis is, for the most part, favourable, and we may always hope for a chance of recovery.

"In *sub-acute cases* of the traumatic variety, recovery does sometimes take place, and especially where there is a long interval between the injury and its accession, and where the symptoms set in mild and pursue a slow course, gradually advancing in extent and severity.

"In *acute traumatic cases* the prognosis is most unfavourable, and there is scarcely a well-authenticated instance of recovery on record."

In view of this authoritative expression of accumulated experience, it is natural that interest in the acute traumatic form should have a large development, although we differ, in the premises of the third proposition, from its able writer, as regards the ratio of mortality.

With regard to the general mortality of the affection, we again quote Mr. Poland, who says:—

"Taking all forms together, in a fair average number of cases, the proportion seems to be 7½ deaths to one recovery."

We cannot close these remarks without insisting upon the absolute necessity for constant, watchful, and intelligent nursing, whatever be the method of treatment adopted. It is impossible for a medical attendant to anticipate either the persistence or the variation of symptoms; consequently the emergencies must be met, and advantage taken of opportunities which may prove the turning points in favour of the patient. Without such care no treatment may avail, but with it some mode of practice may gain credit and life be saved. Modern medicine calls for incessant watching in most diseases. The physician or surgeon may direct, but can rarely conduct the details of management.

CASE I.—J. G., æt. 48, admitted into the hospital of the University of Maryland, February 26, 1866. Three weeks previously the patient fell from a cart, sustaining an injury of the scalp over the left frontal pro-

tuberance, laying bare the bone to the extent of three inches. He received appropriate attention but continued his work.

At the end of a week his jaw stiffened; and rigidity of the muscles of other parts appearing, he was sent to the University hospital. The jaws were then tightly locked; the facial muscles and the sterno-cleido-mastoids tonically contracted; the thorax almost fixed; respiration difficult, and also deglutition, and opisthotonic seizure seemed imminent; the pupils were contracted; general expression of the patient one of distress and anxiety. The wound had healed, but the cicatrix was wide, red, and tender. To change the condition of the scar, which might act as a persistent cause, we applied the actual cautery with decided local effect. Calling to mind the effects of *conia*, we had prepared the following solution: ℞.—Coniæ gtt. ij, acid. sulph., gtt. j, aquæ ℥j, and ordered fifteen drops of it to be injected hypodermically every two hours, day and night. Under this treatment the condition of the patient began to improve, and his muscles to relax, although by slow degrees. As he had lost several incisor teeth, nourishment could be administered readily, and was given freely during the whole course of the affection. But he still found great difficulty in deglutition, and the dyspnœa was such as to force him to maintain the sitting posture almost constantly.

March 15. Was able to open his mouth and protrude the tongue. Could swallow without difficulty, and move his head easily, and all the afflicted muscles had become softer to the touch. The eyelids moved freely, pupils resumed their normal state, and the formerly anxious countenance resumed its natural expression.

16*th*. Still improving. As he complains of the severity of the hypodermic method, his treatment was modified as follows: ℞.—Tinct. conii, ♏xx, to be taken by the mouth every four hours, alternating with the hypodermic injection, which is to be employed every four hours also, conium in some form being exhibited every two hours.

18*th*. Suspended conium treatment, as a dry throat and symptoms of poisoning appeared. Nothing was substituted.

26*th*. Has entirely recovered the control of his muscles, and is this day discharged well, having been in the hospital exactly one month.

It is worthy of mention that during the whole of this time decided hyperæsthesia of the surface existed. Before dismissing this case we would call attention to the facts that an improvement began early and steadily; although slowly continued, the conia was not pushed to the extreme of tolerance; and that symptoms of poisoning occurred then only when conium in another shape was used along with conia employed hypodermically.

CASE II.—The notes of the following case were kindly furnished me by Mr., now Dr. G. L. Wilkins, of Baltimore:—

"C. G., æt. 24; engineer; sanguine temperament. September 5th, 1869, while on duty in a tugboat, his right hand was caught between the main bearing and the eccentric cam, causing fracture of the distal extremity of the first phalanx of the index finger, with laceration of the soft parts. He was seen within two hours after the accident by Mr. G. L. Wilkins. Complained of severe pain, which made him extremely restless. Ordered proper dressings to the finger, and an anodyne to alleviate the pain, which, however, was still distressing, and continued with more or less severity for three days.

From the 10th to the 19th Sept. he was absent from the city, and during this time he was careless about his injury. At the latter date he first observed stiffness of the muscles of the lower jaw. Was seen on the 20th, when he had rigidity of the jaw, neck, back, and extremities, coupled with a sensation, when walking, "as if his feet did not touch the floor;" countenance anxious and restless; finger has assumed a healthful appearance. The case was now yielded to Dr. W. H. Dwinelle, who ordered a half grain of sulphate of morphia every two hours.

21*st*. Rigidity has increased, and invaded the whole muscular system; risus sardonicus and slight opisthotonos; tetanic spasms about every twenty minutes; urine retained; pulse 100; great heat of surface. Morphia was ordered, and catheterism to relieve the bladder.

23*d*. All of the symptoms increased in intensity. Spasms recur about every seven minutes; opisthotonos more marked; deglutition difficult; jaw nearly fixed; constipation obstinate; and perspiration profuse. Morphia continued, and croton oil in fluid extract of senna to relieve the bowels. The finger, looking ill, was amputated, and with it the metacarpal head; the stump dressed with belladonna ointment. Prof. C. Johnston called in consultation. Patient ordered ℞.—Coniæ ♏iv; acid. sulph. dil. ♏ij; aquæ ℥ij: of this twenty drops, used hypodermically, every three hours, beginning at 1 A. M. of the 24th, when the morphia was discontinued.

24*th*. No appreciable change; pulse averaged 96; spasms about fifteen minutes interval. Ordered solution of conia ♏viij to water ℥ij; 10 drops to be given hypodermically every two hours. ($\frac{1}{3}$ drop.)

25*th*. The last remedy increased to fifteen drops every hour. ($\frac{2}{3}$ drop.)

96*th*. Conia, one drop in five drops of water, hypodermically every hour.

27*th*. Same solution of conia increased to seven drops every hour.

28*th*. Condition of the patient greatly improved; whole muscular system becoming relaxed, and deglutition easier; pulse 72. At 7 P.M. the solution of conia was increased to ten drops hourly. Throughout the day the spasms averaged about three in each hour.

24*th*. Catheterism unnecessary; pulse 68; spasms about every half hour. During the day ten drops of the solution of conia every hour. At 7 P. M., in consequence of the feeble tone of the pulse, the interval of the conia extended from one to two hours. Beef essence and brandy. It is, however, to be understood, that the patient was well supported throughout the attack.

30*th*. Muscular system much relaxed; opisthotonos disappearing, and the lateral motions of the neck are resumed; pulse 68; tone feeble. The depression of the heart's action continuing, the dose of the solution of conia was reduced to five drops every two hours, and the stimulants were persevered in.

Oct. 1. Pulse 80, and fuller; slight spasms every ten minutes. In the afternoon tetanic spasms reappeared in great violence, and recurred about every five minutes. To illustrate the decidedly controlling effect of the conia, it is sufficient to say that at 4 P. M. the dose of the alkaloid was increased from one drop to two drops every hour. By 5 o'clock the interval of the spasms was lengthened to fifteen minutes.

2*d*. Pulse 80, and good in tone. In the night spasms about every half hour; and during the entire day but three occurred. In addition to the conia, bromide of potassium was given in ten grain doses from this time, but at intervals of three hours.

3*d*. Slight spasms in the night, recurring about every twenty minutes. Pulse 80. Treatment continued. Conia every two hours.

5*th*. Improvement general; pulse 80. The night was passed *without any spasm*. Conia one drop every three hours.

6*th*. Pulse 84. Several spasms during the night of the 5th; rigidity disappearing. Conia continued. Bromide discontinued.

7*th*. Spasms about every hour during the past night. Conia every five hours. From this date until the 12th the spasms recurred about four times in the twenty-four hours; pulse 84.

13*th*. Conia suspended.

26*th*. No spasms since the 12th; no rigidity; pulse 76, of good tone; stump cicatrizing. Patient discharged cured.

While in use, the conia was continued unremittingly *night* and *day*. A greater diminution in the frequency of the spasms was observed in a given period of time after the exhibition of the conia than in a corresponding period before the next dose.

From the 25th Sept. to the 13th October morphia, to relieve pain, was given every three hours. From the 13th to the 26th October it was used successively every three, four, five, and six hours. On the 26th all treatment was suspended. Catheterism, when necessary, was practised three times a day. The bowels were kept open with ol. tiglii, ¼th drop in ext. fluid senna, ℥ij for a dose. The diet was varied and nutritious."

It will be noted that the conia was first employed on the 24th Sept. in doses of ⅔ of a drop; was increased gradually in amount to 2 drops every hour on the 1st Oct.; and was diminished in quantity until the 13th, when it was discontinued.[1]

Whatever encouragement may be afforded by a review of the foregoing cases, it is our duty to record two fatal ones in which conia was also employed. These four are the only instances in which the writer used the remedy under consideration.

CASE III.—A. B., brakesman, æt. 35. February, 1866, entered the infirmary tetanic, with both feet gangrenous from frost bite. These members were amputated while the patient was anæsthetized by chloroform. The spasms and rigidity not abating, conia was tried hypodermically, with the effect of lessening the intensity of both. But although the dose was increased from ⅔ of a drop to 1 drop every two hours, the patient died in a seizure on the following day.

For the next case we are indebted to Dr. S. Conrad, Resident Physician in the University Hospital (University of Maryland). The report serves to show how carefully and assiduously the patient was attended.

CASE IV.—"J. R. P., sailor, æt. 25, admitted to University Hospital, March 11th, 1869, for syphilitic ulcers on the shin. Had been exposed to cold and wet four days previously in a storm at sea, and received a trifling injury on the forearm. Eight days after admission complained of stiffness of jaws and 'sore throat.' Tetanic symptoms showed themselves two days afterward—the tenth day after admission, and fourteenth after exposure.

[1] This patient was unremittingly watched and attended by Messrs. G. L. Wilkins of Baltimore, and W. H. Whitehead of Tarboro, N. C., graduates of the University of Maryland (March 1st, 1870).

Was ordered opium for two days, and good food. 23d. Began treatment by conia, hypodermically, in half drop doses every two hours, day and night, increasing the quantity, first by diminishing the interval to every hour, as the effect wore off, then augmenting the amount gradually until it reached one and a half drops, and repeated every hour. The contraction of pupil, relaxation of spasm, and reduction of pulse, were marked features of the action of the drug. The latter was observed and noted before each injection, and also ten minutes afterward. In an average of 21 observations, the pulse was reduced from 88.7 to 80.7. Respiratory movements and deglutition were rendered freer and easier, permitting more comfortable breathing and the swallowing of food. As the effect of the injection wore off in the intervals, the trismus and opisthotonos returned. Under the influence of the conia the patient often expressed himself much better, and was able to eject the frothy sputa from the throat and take food. A few minutes before the last dose was to have been given—at 12 P. M. of the 25th—patient was seized with violent spasm, in which he died. Duration of case from time of exposure, 18 days. Duration after symptoms were observed, 4 days. Duration after treatment by conia, 2 days."

In this case tetanus first appeared on the 19th Nov., and ended abruptly on the 24th; but an examination of the notes will, doubtless, corroborate the opinion of Dr. Conrad, that the paroxysms were greatly controlled by the conia, which prolonged the patient's life, although the remedy failed to avert the fatal termination. Let us hope, at the best, that our efforts were in the right direction.

ART. XII.—*Elephantiasis Arabum: Amputation of Left Thigh at Junction of Upper with Middle Third.* By ISAAC SMITH, Jr., A. M., M. D., late Asst. Surg. 26th Regt. Mass. Vols., &c. (With a wood-cut.)

ELEPHAS is so rare in this country, and has been observed by comparatively so few of the profession, that I feel it my duty to report the following interesting case, though the result of the operation was fatal:—

Mrs. J. G., widow, æt. 50, born in England, of English stock, emigrated to this country about twenty years ago and settled in Fall River, where, and in its neighbourhood, she has since resided. She was the mother of nine children, five of whom are still living in this city and in good health, two died in England and two in this country. None of her ancestors, so far as she was aware, ever had any constitutional disease. Her mother completing such an "hawful age" (as she was pleased to express it) that the fact of her longevity was made public in the daily journals of the day. She had never been afflicted with varix in any form. In her pregnancies nothing unusual occurred except with her last two babes, when considerable swelling of the left leg supervened, but which passed away kindly without treatment after labour. She had her men-

strual flux about two weeks anterior to the operation, and had been quite regular in that habit for the year past, and had never had phlegmasia dolens.

Although somewhat foreign to the case, still the following one of *her* life's trials, in conjunction with other seen or obscure causes, might, perhaps, have had some influence upon the lymphatic system: About ten years since her husband left her for California, and she was obliged to support herself and family by daily toil. A few moments after he left the house she discovered that her hard earned and carefully deposited savings of years had been drawn from the bank by this faithless husband. She started in pursuit, but as she drew near the depot the train moved on, bearing with it not only her companion of years but also the savings of years deposited by her in the savings bank. This resulted in a fit of insanity which lasted for two years, which she passed in a lunatic asylum. She subsequently recovered her mental equilibrium and was restored to her family, to which she was a mother to date of death in every sense of the word. A few years later, after unusual muscular exertion in a damp cellar, she was (as her attending physician, at that time, has since informed me) attacked with erysipelas in the left foot, which inflammation subsided under treatment. Soon after, however, she observed that the foot was larger than its fellow, and from that time (over six years since) to date of amputation, January 27, 1870, the foot has steadily, yet surely, increased in bulk, at the same time implicating the leg and thigh to the middle of the middle third.

The measurements of the limb in circumference taken one year prior to the amputation were as follows: metatarsus, one foot; ankle (just below), one foot two inches; ankle, one foot and three-quarters; calf, two feet and five-sixths; knee, three feet; knee (two inches above), three feet two and one-half inches. Measurements a few days prior to operation: metatarsus, one foot and one-twelfth; ankle, two feet one and a half inches; ankle, just below, one foot six and one-half inches; calf, three feet one and a half inches; knee, three feet and one-fourth; knee (two inches above), three and one-half feet; at point of amputation (junction of upper with middle third), two and one-half feet Circumferences of the healthy limb: ankle, nine and one-half inches; calf, sixteen inches; opposite point of amputation, twenty-two inches. These measurements *exceed* those of other cases I have seen recorded.

George Southam, Dispensary Surgeon to the Manchester Royal Infirmary, records (*British and Foreign Medico-Chirurgical Review*, vol. i., January—April, 1848, p. 338) a case of elephantiasis which measured at calf two and three-quarters of a foot, above the knee three feet and a third. It will be observed that the measurement of my case exceeds his around the calf four and a half inches, and of the thigh two inches.

The appearance of the limb (see fig. on opposite page) before amputation exhibited an unsightly huge mass of deformity, the only resemblance bearing on humanity being in the foot, which, though enlarged and distorted with the digits alike implicated, still bore a little resemblance to a foot though in a giant form. The digits and foot had a glabrous and scaly appearance, and were of a dirty yellow hue; hard, not pitting on pressure. Fine deep sulci existed between the folds of integument of the limb with a crescentic fold on the anterior and inner aspect of the ankle about six inches in the longer diameter and two and a half inches in the lesser diameter; at its base or attachment to the tarsus about one-fourth of an inch in diameter, which was of a similar construction with the other diseased por-

tions of the limb, with cuticular tubercular induration and ulceration upon the anterior and inner aspect of the leg with an amber-coloured aqueous discharge.

The temperature of the limb has been very variable during the last year, sometimes intensely cold, but more frequently at a high degree of excitement, and always very sensitive to the touch. In July last she came near to the brink of dissolution from the drain of a huge abscess which formed over the upper extremity of lower third of tibia, from which I evacuated, at one time, twenty ounces of thick sanguineous pus. All kinds of treatment were tried, none found to cure. Some mitigated for a time her sufferings. Allopathic, homœopathic, eclectic, botanic, clairvoyant physicians, and the "layer on of hands," have each found their efforts of no avail. She had the best skill of this city, and has been under treatment in the Massachusetts General Hospital. She appeared before our District Medical Society. Had tried iodine internally and externally by advice of her physicians; cod-liver oil and whiskey, also, without help.

I treated the limb with blisters of ceratri cantharidis, kept open by ceratri sabinæ; and after two months of this treatment the calf of the leg had lost *two inches* in circumference. An attack of pneumonia then supervened, and that treatment was necessarily abandoned, to which "punishment" she was unwilling to return when recovery from the fever took place, and for the last year the disease has been undisturbed by treatment of any kind.

Though seeing no philosophical principle involved, still, from the recorded experience of others, I was led to propose to her ligature of the main artery of the limb, but she said, emphatically, "No." That she and her family had decided on amputation as the only hope on earth for life. She being so fully persuaded, and the prospect for the future being so dark, and, moreover, Copland having recorded successful amputation in this disease, I was led to acquiesce with her feelings after a year's reflection and consideration.

Everything being in readiness for the operation, she desired her clergyman to offer prayer. She then bade us all "good-bye," and commenced the inhalation of ether as calmly as she would ordinarily have sat down to rest. No untoward symptoms occurred during the operation. The artery was readily compressed over the pubes, and very little hemorrhage occurred. The circular integumental operation was the one chosen, and she passed through it without an unfavourable symptom, was comfortably put in bed, partial consciousness returned for half an hour, when a sudden pallor came over her countenance and she passed away calmly.

I am indebted to my father, Dr. Isaac Smith, of Foxboro', Mass., and to Drs. John B. Whitaker, Charles Hayes, and A. J. Sullivan, of this city, for their highly valuable assistance during the amputation; also to Dr. J. C. Warren, of Boston, Mass., a highly accomplished microscopist, for the following pathological statement in regard to specimens of the diseased limb which I furnished for examination. He says he finds the—

"Cutis vera and subcutaneous cellular tissue to be very much thickened by a growth of dense fibrous tissue which seems to take its rise from the *outer coats* of the bloodvessels, which are very numerous and large. There are, also, vessels which appear to me to be *enlarged lymphatics*. It is not possible to distinguish the boundary line between the cutis and the parts beneath it. Most of its organs appear to be destroyed. In the specimens examined there were no traces of hair follicles or sebaceous glands. Traces of sweat glands were found here and there, and in one instance a sweat duct was found entire. The papillæ were much larger than in normal skin."

I believe that although this case was fatal that other cases might give a more hopeful prognosis. The amputation cleared the diseased parts entirely, and the only solution of the cause of dissolution seems to be that it was the result of shock. The limb weighed a trifle over *one hundred* pounds avoirdupois.

FALL RIVER, MASS., March 14, 1870.

ART. XIII.—*Pathology of Alopecia Areata.* By L. A. DUHRING, M. D., of Philadelphia.

FOR the last twenty years micrographers and dermatologists have been discussing whether alopecia areata is due to the presence of a fungus or other causes. This question is worthy of investigation in order that we may be able to treat the disease in a rational manner.

Alopecia areata is a disease confined to the hair system, generally met with upon the scalp, and characterized by whitish bald patches occurring in one or more parts, various in shape and size, but generally circular. This affection must not be confounded with tinea tonsurans, which it often closely resembles, for the latter exists under totally different conditions from those present in alopecia areata, and a distinction must be drawn

between them. Passing over the early literature of this affection, Gruby, in 1843, declared that he had discovered a fungus in this disease, to which he gave the name of *microsporon audouini*. Shortly after this many researches and experiments were made in quest of this fungus, some corroborative of the statement of Gruby, others contradictory of it. The discussion has continued to the present day, and the only means of solving the problem is by aid of the microscope. The fact that this affection bears a resemblance in its seat and appearance to tinea tonsurans should not influence us in our investigation. The question to be solved is: When we examine the hairs and epidermis properly do we see a fungus or not? This appears like an easy problem to solve; at the same time it is but just to remark that the investigation requires a certain amount of skill and practice to avoid error.

The upholders of the present day of the parasitic nature of alopecia areata, foremost amongst whom are Tilbury Fox, Bazin, and Hardy, contend that the disease is produced by the presence of the microsporon audouini, and that this is the only cause of the disorder. This fungus is represented as consisting of mycelium and spores, the former being more abundant than in the trichophyton, while the latter are smaller and less numerous, and have all the general properties of the other fungi, and are found and demonstrated in the same manner as the trichophyton and achorion Schœnleinii. Though the object of the present remarks is to refer particularly to the nature and cause of the disease under consideration, yet, perhaps, a few preliminary words in regard to the mode of examination of the hairs will not be out of place. Among the many reagents we shall only refer to three: solution of potassa, glycerine, and water, and it is proper all three should be employed for a thorough examination, though when in search of a suspected fungus it is preferable to use the first-named solution of the following strength: Potassa fusa twenty-five grains, aqua destillata one ounce. Potassa has a definite action upon the epidermic tissue, breaking up and dissolving the adhesions of the cells at once, while after contact for some time it completely destroys the cell structure, the destructive action varying according to the strength of the solution used. Applied for immediate use of the above strength it merely separates and frees the cells from one another, without acting injuriously upon the epidermic cells of the hair itself to such an extent as to render its employment objectionable. At the same time a solution of potassa has no determined destructive action upon vegetable parasites; on the contrary, its use is always indicated in the search for these delicate structures, since their characters are more plainly brought out by its breaking up the bed of epidermic tissue, thus leading to their detection, when otherwise this would be extremely difficult, if not impossible. In order to get rid of superfluous fatty matter a few drops of sulphuric ether should be used, though this will by no means clear the hair and field completely from fat and sebum. For the purpose of obtaining a proper view of the hair, about

five hundred diameters magnifying power is required, and it is well even to use higher powers occasionally to determine doubtful points; moreover a strong light is necessary to penetrate the substance of the hair.

Alopecia areata presents different appearances in its various stages, but if a patch be examined when the disease first shows itself, the hairs are seen to be fewer in number than normal, and diminished in bulk, intermingled with little, short, broken-off hairs scattered here and there over the patch. In the course of a week or two all these will have disappeared, and a perfectly bald spot with a clearly-defined margin of apparently sound hairs will be seen remaining. It is in these short, stumpy, broken-off hairs that we might expect to find evidence of disease, or at least the most marked alteration. These broken-off hairs, when extracted with the forceps, come out of their sheath without any resistance, and when placed on a glass slip with a drop of solution of potassa covered with a thin glass, and placed under the microscope, are seen terminating abruptly in a pear or club-shaped extremity, instead of the thick, long, spongy, luxuriant-looking bulb with its well-defined, transverse striæ, seen in normal hairs plucked from the scalp. The bulb is contracted, shrivelled, and atrophied, and surrounded with only a scanty supply of sebum and epidermic cells. Its periphery is generally sharply defined with a zigzag border, or in other cases presents a rounded appearance. The root retains its normal look with the exception of being diminished in size. In the shaft, however, we notice, as we approach the free end, an even and gradual distension, terminating generally in an oval swelling or bulging close to the end of the hair, and then suddenly tapering down, finishing in a broken, ragged extremity. These are the appearances we invariably find in a marked case of alopecia areata, *with no sign of fungus!*

When the hairs on the patch that have not been broken, or such as are diseased and are just ready to break, are examined, we see the same atrophied, shrunken bulb, the same feeble root, and the shaft increasing in diameter towards the free end. Many of them escape being injured and broken, and, having been detached from their papilla, act as a foreign substance, and are rapidly cast off.

Is the shrunken, atrophied condition of the bulb characteristic of this disease, or is it found elsewhere? If a hair that has fallen naturally from a healthy head be examined, almost exactly the same appearance of the bulb is seen; it is shrivelled and dead. This atrophied bulb is also found in hairs that have lived their normal life, and, having been detached from their papilla, are thrown off; in one case it is health and in the other disease. Instead of the normal growth and death of the hair, we have a sudden arrest of nutrition from some cause, and a rapid wasting and death in consequence, due most probably to atrophy of the papilla itself. If there be a defective nutrition in the papilla, a paralyzation of nerve force, the bulb will suffer first, but the life of the whole hair is quickly affected, it withers, dies, and is cast away with its blighted bulb and shaft.

Owing to some cause or other yet unknown this temporary loss of vitality in a part occurs, and there is alopecia areata, in some cases to a slight extent, in others involving the whole hair system, scalp, axillæ, and pubes; thus the entire body is deprived temporarily of its hair.

Such in a few words seems to be the most rational and probable explanation of the loss of hair in the disease under discussion, namely, a sudden arrest of nutrition in the papilla. The bulging or oval distension of the shaft at its end, referred to, due, as some consider, to the presence of fungus, is easily explained as follows: The shaft not receiving its proper nourishment from the papilla, its extreme end suffers most, and does not thrive; the filaments not being sustained as usual and losing their vitality, tend to separate and disintegrate, thus stretching the epidermic membrane and causing the appearance described. The fact that the filaments do separate is clearly demonstrated with a high power and a strong, penetrable light; moreover this distension to a greater or less extent is constant, and in the same position in every case.

When the devitalized and brittle hairs are subjected to violence, as from a comb or brush, they are broken off at the point where there is the greatest force exerted, just where they emerge from the scalp, leaving the jagged end, a small portion of the shaft, the root and bulb. In other words, nothing but the stumpy, broken hairs remain in the scalp; these soon loosen from their papilla, separate from the sheath, and are cast off a dead substance. If the hair breaks because it is greatly distended and brittle, it might be expected to break at the bulging, the point of its greatest distension, and instead of a tapering end, a wide-spread, bushy extremity be found. The hair undoubtedly does break at the point of greatest distension, but as soon as this happens the epidermic membrane, which gives contour to the hair, contracts and holds together the free filaments; thus acting as an elastic membrane and not allowing the broken filaments to spread themselves.

It may be asked: How does it happen that a fungus should have been so minutely described, if none actually exists? About the roots and shafts of all hairs normal or diseased, varying with the case, there exists an appreciable amount of sebum, broken-up epidermic cells, and débris. When subjected to a reagent, sebum has a tendency to split and break up into fine particles, and these often adhere so closely and with such tenacity to the hairs as to accurately resemble spores.

I cannot help thinking that it is to these deceptive little particles of sebum that the name of microsporon audouini owes its existence!

Upon two occasions the supposed fungus, the microsporon audouini, was demonstrated to me by experienced and well-known dermatologists; in both cases I had the satisfaction of proving conclusively by means of reagents, that the regularly divided, rounded, bright little bodies were simply aggregations of sebum.

I may add, moreover, that I have found this curious and spore-like

arrangement of sebum upon hairs, normal in every respect. In conclusion, let it be borne in mind that the foregoing observations apply exclusively to the short, broken-off hairs which are found in the earliest recognizable stage, the typical hairs of alopecia areata; after this period the disease presents a different appearance, namely, complete baldness, with an edge of apparently normal hairs, which continues until recovery begins.

ART. XIV.—*Bromides in Epilepsy.* By BENJAMIN SWAN, M. D., of San Francisco, California.

IN 1867–8 I was one of the resident assistants to Dr. Whittelsey, at the Nursery Hospital, Randall's Island, New York city, and among the inmates were some fifty epileptics. The bromides were used freely, and the result of my year's experience was that as long as the system was kept saturated with the bromide "the fits" would be prevented; but an omission of the medicine, or failure to increase the dose after a time, involved a return of the disease.

A boy was brought to the Island who had epilepsy, averaging five attacks per week. He was put on Dr. Brown-Séquard's formula: ℞.—Ammon. bromid. ℈ij; Potassii bromid. ℥vj; Potass. bicarb. gr. xvj; Tr. Calumbo, ℥jss; Aquæ ad. ℥iv.—M. Cap. ℥j t.i.d. The attacks became less frequent. In course of a few weeks, after an interval of nearly a month, they began to increase in frequency again, when the dose was increased.

After this, whenever the attacks grew more frequent, the dose was increased, so that in May, 1867, he was taking drachm doses of the bromide of potassium, and a proportionate dose of bromide of ammonium; on this he went from May till August without an attack.

Great attention was paid at the same time to the bowels, and a purge of calomel and podophyllin was given occasionally. In the latter part of August his father took him from the Island, contrary to my advice, as he could not afford to buy the bromides, saying the boy was well, as "he'd had no fits for four months," and "he'd risk it."

In the middle of October he was brought back, having fits at the rate of three a week. The treatment resumed diminished the frequency of the attacks, but the most heroic doses failed to produce an interval longer than three weeks.

In another case a boy, after reaching drachm doses, had large ulcers appear on his legs. The dose was diminished, when the ulcers healed and the fits returned. We again increased the dose, the "fits" disappeared and the ulcers reappeared.

I might give numbers of cases, all seeming to prove that a point is finally reached when the system becomes insensible to the action of the medicine.

I could not therefore call a case cured while still under the influence of the medicine, and, judging from my own experience, I should very much fear to reduce the dose; and, on the contrary, expect to be obliged to *increase* it.

I believe the bromides to be the best remedies in epilepsy, but I have yet to hear of a case that was perfectly cured.

TRANSACTIONS OF SOCIETIES.

Art. XV.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1870. *Feb.* 16. *Compound Fracture of the Skull with Aphasia.*—Dr. Addinell Hewson exhibited the specimen and read the following account of the case:—

J. T., æt. 23, waiter, single, coloured, admitted to the Pennsylvania Hospital February 11, 1870. At 5 o'clock this morning received a blow from a heavy water pitcher, which produced a somewhat eccentric wound of scalp, about two inches in length, above and slightly in advance of the left parietal boss, and a depressed fracture of the skull beneath. The depression is equal to the thickness of the bone. The patient, although carried to the hospital, walked into the ward, and when first seen was sitting in a chair. Shaved before admission; very little hemorrhage from wound; mind clear; expression anxious; no paralysis of the tongue or limbs; perfect aphasia; gave intelligent replies to questions by signs, but was utterly unable to speak, except a drawling attempt to say, "Yes, sir." Respirations slow; pupils normal; hearing unaffected; no hemorrhage from the ear. No other injury discovered.

Ether at once administered; scalp turned out of the way by elongating the wound, and crossing it by an incision at right angles; a portion of bone removed by trephine, and the depressed portion elevated to its proper line. An effort was made to preserve the periosteum; two small arterial branches were controlled by seraphines, and a larger branch of the temporal by an acupressure pin.

Four hours after the operation.—Seraphines removed, and a dressing of gauze and collodion applied, with a water dressing over all. Patient still unable to speak; condition much the same; dorsal decubitus. Pulse 61; respiration 22. Ordered pil. hydr. gr. vj, to be followed in the morning by Rochelle salt ℥ss.

12*th*. Since the operation has been very restless; is very easily aroused; has some difficulty in protruding tongue; no change in pupils; aphasia continues; some slight venous oozing from the wound. Bowels not been moved; ordered a turpentine injection. Pin removed. Pulse 77; respiration 16.

13*th*. Bowels freely moved early this morning; passed urine and feces in bed, probably because he was unable to call nurse to his aid. There does not seem to be any paralysis of the sphincters. Can arouse him by speaking in a loud tone; he appears to understand, but makes no attempt to answer. Last evening dry earth was used in place of the water dressing. Earth has been removed, crusts not. Very restless; disposed to lie on left side. Pulse 80; respiration 20; somewhat stertorous.

14*th*. Some puffiness around the wound; a poultice applied to venous crusts. At noon all dressings removed, and wet cloths applied; stupor more marked; can detect no paralysis; tongue heavily furred. A.M. Pulse 80; respiration 24. P.M. Pulse 118; respiration 32; temperature in either armpit 105°. Some puffiness of cheek; breathing stertorous; almost if not complete unconsciousness; pupils respond to stimulus of light, left more dilated than right; eyes open.

15*th*. 6 A.M. Death without convulsion.

Autopsy nine hours afterwards. — Cadaveric rigidity slight; some clotted blood beneath scalp. A short distance below the point of trephining the fracture is found to be stellate. Two branches extend downwards; one posteriorly to mastoid process, where it turns forwards to involve base of petrous portion of temporal; the other anteriorly through squamous portion into middle fossa of the skull, towards point of lesser wing of the sphenoid, which it does not, however, implicate. This fracture ruptured the middle meningeal artery at the point at which it crosses it. At this point on the external surface of the dura mater is a large, flat, partially broken-down clot, two inches in diameter. Beneath dura mater left hemisphere is covered, with exception of its posterior fourth, with pus. There is a well-marked but shallow depression in the surface of the brain an inch and a half long and parallel to brain's axis, immediately beneath the point where the bone was most depressed by the blow. Right hemisphere presents nothing abnormal, except an apparent flattening of the convolutions opposite the seat of injury. No hemorrhage at the base, or in the substance of the brain itself, to explain the aphasia; nor could any alteration of the cerebral structure be detected by the microscope.

The point of special interest in this case, and which has induced me to present its history to the College, is the aphasia. This symptom, as I understood from those who accompanied the man to the hospital, developed itself immediately after the infliction of the blow which fractured the skull. Up to the moment of the injury he had been in the enjoyment of perfect health; had never manifested any brain trouble, so that the loss of speech was directly due to the injury. The wound on the scalp and the point of depression in the skull were not in the position to explain, by the idea of direct compression, the existence of this symptom, according to what is generally taught of the location of the faculty. The absence of hemorrhage through the opening made by the trephine, or of its existence under the dura mater, of hemiplegia, of deafness and of bleeding from the ears, ignored, at the time of the operation, the notion of any lesion of moment beyond that of the direct wound. The persistence of this symptom after I had elevated the portion of depressed bone, showed clearly that it was not due to that circumstance.

The clot was evidently the source of the pressure in this case, and its position on the external surface of the dura mater, and at the side of the brain, rather precludes the notion of Voisin that the faculty of speech is located in the gray matter of the left island of Reil, and also that of Broca that it is in the inferior portion of the third frontal convolution of the left hemisphere, for the pressure which it could have exerted through the brain substance at either of these points must have been very trifling. The case could, however, be used to support Dax's (père) rather indefinite idea of the faculty being located in the half hemisphere, or even Bouillaud's still more vague theory, for which he has offered five hundred francs for a case to controvert, that it is in the anterior lobes of both

hemispheres, for the right hemisphere was evidently crowded over in its anterior portion on to its side of the skull. The occurrence of the essential lesions in this case, on the left side, is in accordance with what has been most constantly observed; and in this connection the fact pointed out by Gratiolet, of the development of the left hemisphere being in advance of the right is of some importance. So is also the fact of this man having been a negro, for the same high authority has shown that in the Caucasian race the anterior fontanelle is the last to ossify in order to permit of the greatest possible development to the frontal lobes, whereas in the Ethiopian race the converse condition exists, the posterior fontanelle is the last to ossify, hence the receding forehead and the well-developed occiput in the negro; and we may have some explanation of the symptoms being so much more marked in this instance than what I am sure many here have seen arise in the white man from the same extent of lesion.

March 16. *Ulcero-Membranous Angina.*—Dr. J. M. DA COSTA read the following paper:—

There is at present prevailing in the city a form of sore throat which seems to me to present features worthy of study. I shall endeavour to describe these features from ten cases, eight of which occurred in my own practice.

The complaint begins with a chill, followed by fever and the ordinary manifestations of angina. But on looking into the throat we find, within twenty-four hours of the outbreak of the malady, on the tonsils, small spots covered with a yellowish exudation, and on inspecting them closely we perceive them limited to the follicles of the glands, one tonsil being more affected than the other, but both sharing in the disorder. Each is red and swollen, and the redness extends to the half arches and palate; the back wall of the pharynx, too, is in some cases implicated, and its follicles may be red and prominent. But beyond the yellowish exudation mentioned, there is nowhere any sign of deposit, nor does any appear as the case progresses. Shortly after the throat affection is manifest, or at the same time with it, a marked enlargement of the glands of the neck takes place; the submaxillaries and the chain of glands connected with them become painful, prominent, and hard, generally much more so on one side than the other. Coincident with the glandular swelling we are struck with the prostration of the patient—a prostration great, apparently unaccountable, and out of all proportion to the sore throat. The fever, which never runs high, which never, therefore, shows much acceleration of pulse or heat of surface, remits in the morning, exacerbates in the evening, and soon gives way to a moist rather cool skin, and to pallor of the countenance. There is from the onset utter loss of appetite, with a heavily coated tongue, sometimes with nausea and vomiting, and occasionally with slight diarrhœa. After three or four days the little yellow marks begin to disappear, and we find where they have been, raw spots, as if from superficial ulceration. The enlarged chain of glands commences to subside, but the hardness remains for a number of days after the throat has an almost natural look. The patient is now out of bed, and to all appearances fairly convalescent, very weak and wretched, but without active throat trouble. He has arrived at this condition from the 6th to the 9th day of his sickness; in milder cases sooner. But does he now get well? Not always. A relapse is very prone to happen. It

occurred in four out of the ten cases, and in one of these twice. I shal briefly describe this case :—

C. M., aged 6, had a light form of this angina, lasting three days; then convalesced, and remained well a few days, when she was again seized with a sore throat and glandular enlargement. The attending debility was so great that she fainted on attempting to rise from bed. The second attack lasted about four days, and all appearance of sore throat passed away. But in a few days more she had as in the previous invasions, a chill, slight febrile excitement returned, the glands of the neck were again very much swollen, and the follicles on the tonsils, as at first, covered with little yellowish masses. Her tongue was heavily coated, and the prostration very decided. Indeed she was herself so conscious of her weakness that she gladly remained in bed; for an attempt, even after she appeared nearly well, to get at her playthings led to a fainting spell, and to subsequent positive distaste for the previously coveted toys. The third attack was of six days' duration, and left the glands of the neck swollen; at its termination, large fever blisters appeared on the lips and cheek.

The sister of this little girl, 11 years of age, had also a relapse. In her case the affection of the follicles of the tonsils was very marked, and there was considerable loss of substance after the ulceration was manifest. The glandular swelling was very great and painful, lasted for two weeks, and finally involved the right parotid, thus giving rise to a secondary parotitis; this henceforth with the suppurating cervical glands formed the leading feature of the case, and a tedious and protracted convalescence ensued.

Tumefaction of the glands of the neck is then a prominent trait of the malady. In truth it is never absent, occasions much discomfort, and is at times associated with sharp shooting pain, passing to the angle of the jaw. The glandular swelling is double-sided, yet generally much more marked on the side on which the affection of the tonsils is most decided. The enlargement of the glands is confined to the neck. I have looked in vain for prominence of lymphatic glands in other parts of the body.

The secretions in this angina are much influenced. I have already spoken of the heavily furred tongue. It remains furred throughout the attack, and then cleans from the edges; the follicles are in places seen as prominent points, surrounded by the deep coating. As regards the urinary secretion it is apt to be scanty at first and high coloured, then increases and becomes pale. I have tested for albumen in several cases, both early in the malady and at its decline, but have not found this abnormal ingredient. The only exception was in the case of great glandular swelling just alluded to. Here when the sore throat had nearly terminated, and the glandular swelling was marked, an extremely slight opalescence was noticed on boiling the urine and adding nitric acid; as the glandular swelling became enormous and involved the parotid, albumen appeared in decided quantities. But this case was the worst I have encountered, and the depression and signs of blood-poisoning were those of a malignant sore throat.

The disorder I am discussing is pre-eminently a disease of children or of young adults. The youngest of my patients was three years of age; the eldest, twenty-five. It is, I think, contagious. Four cases occurred successively among the children of one household; three others, among young adults of another. And Dr. Herbert Norris informs me of eighteen

cases that happened mostly at the Orphan's Asylum, which I recognize from his description to have been the same disease. True, the argument against the supposed contagion might be that the cases were all equally exposed to the epidemic influence, but members of the same family being seized one after the other, and sometimes a week apart, is greatly against this view of the subject.

Good general health does not confer immunity, for some of my cases happened in the most robust subjects. Nor does the previous occurrence of scarlet fever exempt, since nearly all of my patients had had scarlet fever; four of them I attended for this disorder about a year ago.

Looking now at the distinguishing features of the sore throat, we find it unlike ordinary tonsillitis in involving so uniformly both tonsils and inflaming the parts around, though not blocking up the throat so completely; unlike, in the existence of a follicular exudation and subsequent small points of ulceration rather than of the creamy streaks and suppuration with marked loss of substance of quinsy; unlike, in the absence of much difficulty in swallowing, in the early and extensive implication of the cervical glands; unlike, further in the slight fever, in the great prostration. We encounter, it is true, in some cases of tonsillitis, whitish spots on the inflamed gland, but these exudations or discharges from the crypts are not associated with ulceration, and the whole character of the case is so different.

But the most interesting point in connection with this angina is *its distinctions from diphtheria*, I mean from that malignant disease which we ordinarily describe as diphtheritic sore throat. I admit at once that in isolated cases, or where we are unacquainted with the epidemic tendency, such a distinction may be with great difficulty arrived at, may, indeed, not be possible. But when we see cases in which the disorder is limited, and particularly to the tonsils; in which the exudation shows no spreading tendency; in which superficial ulcerations happen; in which a chill and febrile excitement and nausea and vomiting mark an abrupt beginning; and in which, though sick and prostrate, the patient always recovers—we have cases before us very dissimilar to the dangerous disease of insidious approach, of constant tendency to extension, of so often swiftly destroying character.

Let us leave, however, the merely distinctive clinical features for other considerations. Is not, perhaps, the disease I am endeavouring to describe after all in its nature diphtheria? Do we not find prostration, out of proportion to the local lesions, and signs of blood-poisoning, as we do in diphtheria? We do find these signs, and they suggest strong analogy, suggest, I believe, relationship, but not identity. How else account for the fact that in not one of my cases regular diphtheria with its spreading formations occurred, notwithstanding, as I have already stated, that in many instances the disorder propagated itself so distinctly by contagion? And the same fact was noticeable in Dr. Norris' cases; the ulcero-membranous sore throat, to call it by this name, produced only ulcero-membranous sore throat.

This disease then may be kindred to diphtheria, but it is not diphtheria, and is the result of a special and milder poison. It is very likely that some of the membranous sore throats dwelt on by the older authors were of this kind, though all their descriptions, it is the fashion of the day, to dismiss contemptuously as imperfect descriptions of the one disease, diphtheria. The cases from which I have drawn my conclusions may be

perhaps identified with some of follicular diphtheritis which have been recently reported; still more certainly with the malady named by Gubler, "herpès guttural," but which Trousseau delineates far better under the term of common membranous sore throat—a term previously used by Bretonneau, who, though recognizing what I suppose to have been the same disease, describes it but very imperfectly, making, however, a statement that shows him not to have thought it diphtheria, namely, that of all affections it is the most difficult to distinguish at the commencement from diphtheritic angina.

As regards the treatment employed in my cases it consisted locally, of gargles of chlorate of potassa and claret, and of sage tea and alum; internally, I gave at first remedies to act slightly on the skin and allay the nausea; soon, however, in all but the mildest instances of the disorder, followed by iron, preferably used as the tincture of chloride in combination with acetate of ammonia. Quinine also was resorted to, but it did not ward off the relapse in the case in which it was most freely employed. Milk and nourishing broths were ordered in considerable quantities from the beginning, or rather as soon as the stomach tolerated them well, and this free nutrition was often aided by small quantities of stimulants as the malady advanced; large quantities were never necessary and never given. Poultices around the throat offered decided relief where the swelling of the cervical glands was marked, and many of the little sufferers went quietly to sleep under their soothing influence.

Chronic Laryngitis, presumably Syphilitic; Asphyxia; Tracheotomy. Complete Cure with Restoration of Voice.—Dr. WILLIAM PEPPER read the following history of the case with remarks:—

C. Y., æt. 38, native of Holland, married, of temperate habits, and had followed the sea from his youth, was admitted to the Pennsylvania Hospital January 9, 1865. Fifteen years previously he had contracted syphilis, but, with the exception of repeated attacks of sore throat, has never presented secondary symptoms. Has never infected his wife. Has three perfectly healthy children. No hereditary predisposition to tuberculosis. Was always healthy until 1861, when he had a bad attack of sore throat, with severe cough and thick mucoid sputa. Was treated by cauterization of the throat and recovered in fourteen days. Five months afterwards he had a second attack of sore throat, attended with great dyspnœa and dysphagia, from which he again entirely recovered. Fourteen months afterwards he had a third, but more mild, attack of sore throat. In February, 1865, his throat again becoming sore he went immediately to the coast of Cuba. The disease increased, however, and he began to suffer much from dyspnœa and aphonia, with pain and soreness in the larynx.

On admission, he was ordered ammonia carb. gr. vj, syr. senegæ f℥ss q. s. h. The posterior wall of the pharynx presented several dense, white cicatrices. Laryngoscopy was attempted, but it was impossible to get a clear view of the larynx owing to the thick mucus which continually rose from it. There were no physical signs of tuberculous disease of the lungs.

July 10. After several weeks his voice became better, and the spells of dyspnœa less frequent and severe. The improvement, however, was transient, and he soon had several spells of spasmodic dyspnœa, which almost called for tracheotomy. He was put upon the use of large doses

of iodide of potassium; blisters were applied over larynx, and he was directed to use warm inhalations.

August 7. Ordered ol. morrhuæ f℥ss t. d., and hydrarg. bichlorid. gr. $\frac{1}{16}$th was added to each dose of the iodide of potassium. The inspirations were very stridulous and laboured, his voice almost lost, and the dyspnœa extreme. Some relief was obtained from the internal use of ether. Has lost flesh, and has hectic fever at night.

September 4. The dyspnœa increased so frightfully during the past twenty-four hours, the surface becoming livid and the extremities cold, that it was decided to perform tracheotomy. On entering the ward to operate, he was unconscious, with barely perceptible respiration. The face and extremities were cold. I immediately performed tracheotomy, but, before the operation could be concluded, breathing had entirely ceased, the head fell back, and the lower jaw dropped, the heart, however, continuing to beat very feebly. The tracheal tube was hastily introduced, and artificial respiration (by Marshall Hall's method) was resorted to, and aq. ammoniæ fort. held before the nose. For some time it seemed impossible to rouse the nerve centres, but gradually the capillary circulation improved, large quantities of tough bloody mucus were discharged through the tube, and by the end of forty-five minutes he could be roused so as to breathe voluntarily, although he constantly tended to fall asleep. Whiskey was freely administered so soon as he could swallow, and in an hour and a quarter, respiration was being carried on quite naturally. The incision commenced a half-inch above notch of sternum, and embraced two tracheal rings.

For some days there was very little inflammation about the incision. His respirations were easier than for several months, and his power of deglutition became much better than before the operation. He again slept quietly, and was able to walk about without any difficulty, and gained flesh and strength daily. Ordered syr. ferri iodidi f℥ss t. d. p. c.

14*th*. Found early in the morning suffering with extreme dyspnœa, and breathing hastily with a hissing sound. The tube had slipped out of position, and was therefore immediately removed. Even then, however, the respiration was very imperfect and difficult, the face became livid, and a marked tendency to drowsiness showed itself. On attempting to re-introduce the canula, it was found to readily enter the opening in the trachea, but could not be forced downwards at all. A stricture was found, less than an inch below the tracheal opening, through which the smooth rounded end of a small silver catheter could barely be passed. Gradual dilatation was effected by graduated catheters until he was able to wear one with an eye large enough to carry on respiration through. Later in the day, Dr. William Hunt extended the external incision upwards about an inch, cut out a small piece from each edge of the trachea, and then endeavoured, by a curved bistoury, to nick the constriction. This was partially successful, but the ordinary canula still could not be introduced, and he was obliged to wear a canula formed of the lower end of a large silver catheter with the eye much enlarged, with wire rings soldered on either side to allow it to be secured in place by a tape passing around the neck.

October 4. For some days after the above operation he was unable to swallow anything but liquids, but he is again gaining the power of deglutition. External wound filling up rapidly; still wears the catheter. Is again up and walking about, and has gained some flesh and strength.

21*st*. Dilatation of the tracheal stricture has been steadily persevered in by means of flexible bougies, and a large canula has been passed by means of a *plunger* with a smooth conical end. This was readily passed through the stricture, and worn with ease. A remarkable improvement has taken place in the last two weeks; he has gained greatly both in flesh and strength; is able to swallow without difficulty, and by closing tube with his fingers can speak with some force, though huskily. An inner canula, accurately fitting the first, and with a straight projection anteriorly so as to carry the sputa clear of the neck, has been introduced, and he left hospital to commence his trade of a sail maker. Ordered to continue syr. ferri iodidi ʒss t. d.

During the cold damp winter weather he suffered considerably from bronchial irritation and dyspnœa, and about February there were indications of the laryngeal disease progressing, as he began to experience great trouble in swallowing, from the entrance of fluids and solids into the larynx. He suffered violent spells of coughing during meals, so that it took him hours to eat a dinner. At the same time he emaciated and lost strength. The tube never created any irritation. These symptoms subsided, and when next seen, May 24, 1866, he was much improved in appearance; had gained flesh and strength; breathing slow, regular, and easy; and by closing the tube he was able to speak quite plainly, so as to be readily heard across the street. Expectoration had almost entirely ceased. The tube did not cause the slightest irritation. There has been no necrosis of the tracheal rings.

He was seen again February 14, 1869. During the last thirty-three months he has continued in excellent health, and is now a very vigorous and robust man. He has worked steadily at erecting high scaffoldings. Expectoration has entirely ceased; never suffers from catarrh, though exposed to all kinds of weather. Still wears the tube all day, enveloping the throat in a thick woollen scarf. At night, however, he removes the canula and sleeps without it. He never experiences the slightest difficulty or irritation in thus frequently removing it. By closing the orifice of the canula he can now speak in a clear and loud voice.

Remarks.—The first point of interest in this case is the determination of the nature of the laryngeal affection. The history of primary syphilis was perfectly clear, but a period of eleven years followed the infection, during which no secondary symptoms whatever manifested themselves. Subsequently, however, the patient suffered from repeated attacks of ulcerated disease of the pharynx with laryngitis; and the character and results of these attacks agree so entirely with those of an undoubtedly syphilitic nature, that it seems altogether probable that such was their character in the present instance. At one time the marked emaciation and hectic fever led to the suspicion of tuberculous disease, but this idea was rejected on account of the age of the patient, the absence of hereditary tendency, the evidences of severe ulceration of the pharynx, and the absence of any physical signs of pulmonary disease.

It is to be regretted that the operation of tracheotomy was postponed until so late, but this postponement afforded an unusual opportunity for testing the power of artificial respiration in the resuscitation of asphyxiated patients. In point of fact, the patient may be said to have been dead, so far as the brain and lungs were concerned, though the heart still continued to contract slowly, feebly, and ineffectually. The mere effect of the operation itself was purely negative, as all respiratory movements

had entirely ceased, but it gave a chance for the employment of artificial respiration with complete success. The easy, free, and forcible entrance and exit of air through the tracheal tube in this case, as the movements of the trunk advised by Marshall Hall were performed, suggested the idea that tracheotomy might be resorted to to aid artificial respiration, even when there was no obstructive disease of the larynx. It is probable that in many cases of profound asphyxia, the effects of any method of artificial respiration are seriously impaired owing to the difficulty of securing free admission for the air to the lungs. Apart from the fact that the nasal and buccal cavities may be more or less obstructed by mucus, the vocal cords are relaxed, and are apt to be approximated by the pressure of the entering column of air, so that the aperture of the glottis may be narrowed or even obstructed during the artificial inspiration. Should this difficulty be suspected in any case, it is to be remembered that the operation of tracheotomy requires but a moment to perform, that in itself it can scarcely be said to present any danger, and that it affords instantaneously a free, uniform, and certain mode of access for the atmospheric air to the lungs. It so rarely happens that we have an opportunity of learning the sensation connected with the act of dying, that I cannot forbear from alluding to the testimony of the patient on this point. For some time before he passed into a state of unconsciousness he had presented all the appearances of threatening asphyxia. His face was livid; the features distorted with the efforts at inspiration, and his expression most agonized and appealing; all the muscles of respiration were thrown into violent, almost convulsive, action, and the hands were frequently put up to the throat as though to remove some obstacle. These symptoms disappeared as the state of asphyxia became profound; but I am sure that an ordinary observer would have said that he had died a most painful and horrible death. Some weeks afterwards when questioned carefully as to his sensations for some time preceding the operation, his only recollection of his feelings was conveyed in the expression "that he went gradually into a sweet sleep!"

The after-course of the case illustrates one of the dangers which must be guarded against, although it is impossible to say certainly whether the stricture of the trachea was due to disease which had existed before the performance of the operation, or had been caused by granulations developed by the irritation of the end of the canula. It is probable, however, that some antecedent ulceration of the trachea must have existed. The success which attended the dilatation of the stricture by graduated flexible bougies illustrates clearly the impunity with which lesions of the trachea can be treated after tracheotomy.

It is by no means an unusual thing for tracheotomy in syphilitic diseases of the larynx to be followed by the excellent results obtained in the present case. It may indeed seem surprising that the mere operation itself should induce a complete cure of the local disease of the larynx, and that the aphonia, dysphagia, and all signs of irritation about the part should so soon disappear. But it is, I believe, a fact that when once the larynx is placed at perfect rest by the admission of air through the new tracheal opening, the tendency in the majority of cases is to an arrest of the laryngeal disease, and to a return of the parts to as near their normal condition as the actual loss of substance from ulceration will allow. Undoubtedly this tendency is favoured by the continued employment of suitable internal treatment, and it is another of the great advantages of

tracheotomy that it gives the opportunity of pursuing the use of anti-syphilitic remedies. Still another advantage that is gained by tracheotomy, in reference to the local disease, and which has been already alluded to, is the opportunity for using local applications to the seat of disease, and, in the event of finding obstruction of the trachea, for dilating the stricture by suitable instruments. So far as concerns the effects of the operation upon the general nutrition the benefit gained is incontestable. In the present case the patient had been using the same internal treatment before as after the operation, and yet, within a few days after the canula was first introduced, the mere admission of a free supply of oxygen to the lungs was sufficient to cause a change in his whole nutrition, and to lead to a rapid improvement in general appearance, and to an increase in both flesh and strength. It is certainly not surprising, when we reflect upon these positive advantages gained by the performance of tracheotomy in obstructive syphilitic disease of the larynx, that the idea should have presented itself of resorting to the operation not merely to save life from actually threatening asphyxia, but as a means of cure. In a valuable paper read before the Clinical Society of London by Mr. Thomas Bryant (*Trans. of Clin. Soc. of London*, vol. i., 1868, p. 127) upon "tracheotomy as a means of cure in chronic laryngeal disease," he says:—

"In too many instances operative interference is postponed to too late a period for even this result [the improvement of the local disease] to be obtained, the patient being frequently in a dying state before such an operation is demanded or thought justifiable; for it may be here stated that every patient with ulcerative disease of the larynx is not far from death's door, and that at any moment a laryngeal spasm may take place and destroy life. But in the present day surgeons and physicians have only thought of tracheotomy as a last resource, as the means of warding off death when threatened from impending suffocation, and never in the light of a cure for the disease itself. I would wish them to look upon it in such an aspect, for I believe that we have in tracheotomy a valuable remedial agent in ulcerative laryngeal disease—syphilitic or otherwise—and that we have it in our power in many cases not only to save life by such an operation, but to preserve the larynx as an organ of voice and respiration."[1]

The present case is offered merely as an illustration of the actually curative effects of tracheotomy in ulcerative laryngeal disease, and consequently as a corroboration of the views of Mr. Bryant, above quoted. It illustrates further the fact that, even when the disease has reached its last stage and death is imminent from asphyxia, the operation should be performed, and may not only be followed by great prolongation of life, but by marked improvement in the local disease. It is however impossible to draw from such a result the inference that tracheotomy should be postponed until so late a period. This is forbidden both by the fact that such long delay is apt to be attended by irreparable injury to the larynx, and further, that when the degree of obstruction is considerable, there is always danger of sudden death from a suffocative attack before aid can be summoned and the operation performed. The operation is indicated therefore, whenever, in spite of constitutional treatment and of local applications, ulcerative disease of the larynx is advancing, and the symptoms of obstruction are increasing. There is already abundant evidence to show that when performed under such circumstances we may hope not

[1] See also M. W. Trélat, on Tracheotomy in Syph. Lesions of Resp. Passages, in Arch. Gén. de Méd., Jan. 1869, p. 105.

only for an arrest of the disease, but in many cases for a restoration of the functions of the larynx. The time at which the canula can be removed will of course vary with the stage and extent of the laryngeal disease. As a general rule it may be said, however, that it should not be removed until the local disease has healed, and it has been found that respiration can be carried on through the larynx. In order to determine this latter point a canula may be employed having an opening upon the convexity of the tube, and with a sliding valve by which the external opening may be more or less reduced. In cases where it is necessary for the canula to be worn for a long time it should never, according to Bryant, be allowed to remain unchanged for more than three months. The present case furnishes an excellent illustration of the tolerance of its presence which is established, and of the impunity with which in some cases, the tube may be worn for years, and removed and re-introduced at the pleasure of the wearer.

Acetic Ether as an Anæsthetic.—Dr. H. C. WOOD spoke of the prevalent dissatisfaction of the profession with our present anæsthetics and the consequent search, especially in London, for new ones. He thought that this search had perhaps been in a measure wrongly directed, since it had chiefly been among the chlorine compounds, many of which, if not all, are powerful depressants, and drew attention to the recent death from bichloride of methylene as an illustration of their dangers. He had therefore directed, himself, some thought to the ether series as probably all stimulants. He exhibited a specimen of acetic ether to the College, prepared for him by Mr. Chas. Bullock of this city, and stated that he had not yet tried to fully anæsthetize the human subject and could not therefore say whether any practical use could be made of it. In pigeons and rabbits it produces perfect unconsciousness without nearly so much previous struggling as when ether is used. It is certainly much more agreeable, though apparently less active than that anæsthetic, having a peculiar pleasant odour, very closely resembling that of apples, which no doubt owe their smell to it or the closely allied—malic ether. An advantage which it has over sulphuric ether, especially for night use, is its comparative non-inflammability, connected partly with its lesser volatility. It seems impossible to light it through its vapour diffused in the air, and when set on fire its flame may be readily blown out, which it is well-known cannot be done with ether. A curious result of its high boiling point and slight volatility is that cotton saturated with it will remain for an hour or more sufficiently impregnated to produce anæsthesia in a pigeon. He had himself breathed the vapour, but not to the point of unconsciousness. The sensations produced were similar to those connected with the inhalation of ether, but he thought more pleasant. Dr. Wood then placed a pigeon under the influence of this anæsthetic. It passed gently and quickly into an insensible state, and again awoke without struggling after a few minutes of quiet sleep.

April 20. *Excision of a Portion of the Lower Jaw.* Dr. FORBES exhibited the patient and said:—

The case of the young woman now before the College is one of excision of one-half of the lower jaw-bone, with the exception of the condyle and coronoid process. The ablation was from the symphysis to the sigmoid notch on the left side.

The operation was performed just a year ago, and the woman is now in the enjoyment of excellent health. The sinking of the cheek is but little and the deformity is slight, as the Fellows of the College will observe only a very small linear cicatrix from my excision, extending from the inferior margin of the symphysis along the under surface of the body to the posterior aspect of the angle of the bone.

H. B., aged 23 years, unmarried; works at a sewing machine; came into the Episcopal Hospital on the 9th of February, 1869.

Three years previous to her entrance she had observed a lump on the lower part of the gum of the left side of the lower jaw which she attributed to some decayed teeth, but having the teeth removed the lump did not disappear—on the contrary, it soon got larger. It gave her but little pain, and grew slowly, when in September, 1868, she observed some "growths" coming up from the jaw where the teeth were formerly lodged and which had been removed nearly a year previous. Early in November, 1868, she went to the clinic of the University of Pennsylvania, and a portion of the tumour was removed through an incision extending along the inferior lateral surface of the bone. The wound healed, leaving an elevated line or cicatrix. Soon after this she entered the Episcopal Hospital, and when I came on duty in April the tumour was observed to be increasing. It had been three years in attaining its growth; it was comparatively painless; the tissues covering it remained healthy, though greatly distended; the absence of all glandular disease and of all cachexia, and any tendency to ulceration; its situation and the freedom from resentment of any injury, although a portion of it had been removed some months previous, all these points indicated its benign nature, and the propriety of recommending its removal. Accordingly, at a consultation held the first week in May it was so decided. The patient was anxious for the operation, and it was at once performed.

Ether being administered the left inferior incisor tooth was removed, and an incision was made with a bistoury under the chin just behind the symphysis and the knife carried up close behind the bone on its concave aspect until it appeared behind the gap made by the drawn tooth; a chain saw was then passed up through this opening by means of an eyed probe armed with a ligature having the saw attached. The jaw-bone was then bisected at the symphysis, the tongue being held out of the way by means of a thread passed through its tip. An incision was then made from the under surface of the symphysis along the inferior border of the bone to the posterior aspect of the angle; the facial artery was cut and secured at both ends, the soft parts with as much of the periosteum as possible were elevated; a similar incision was made nearly parallel to this so as to include the rough linear cicatrix of the former operation, and the parts detached as rapidly as possible. The inferior dental nerve and artery where they enter the posterior dental foramen were severed and the artery secured. The chain saw was now passed around the middle of the ramus of the bone and the end near the symphysis grasped with a strong pair of forceps, was held by an assistant, and the section of the bone removed.

The gap thus made was large—six ligatures in all were applied and the general oozing arrested by bathing the part with equal parts of alcohol, laudanum, and water. The amount of blood lost was believed to be about four ounces. The lips of the wound were approximated and held by leaden wire, and the cavity packed through the mouth with pledgets of lint. A dressing of cerate was applied and sustained by a bandage, the

ligatures being brought out of the angle of the mouth. The patient reacted well, and an anodyne being administered she was removed to the ward. The anodyne was repeated frequently, and she was sustained by liquid nourishment. The sutures were removed the third day; the ligatures came away in due time, and in four weeks she left the house well.

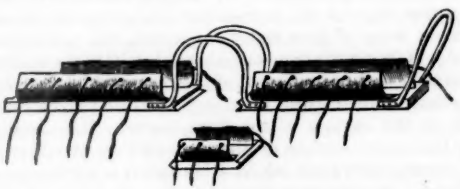
On examining the tumour it was found inclosed by the body of the bone, having distended its walls, particularly the outer one, until they had become exceedingly thin and destroyed in two places, as may be observed in the specimen in the bottle. Its boundary was well defined, though it was not in a capsule; its centre was soft and almost gelatinous, and of a grayish-white colour; and every part of it was easily broken up. On examination under the microscope, cells, angular and attenuated like caudate cells, having dotted contents, with nuclei and nucleoli, and free nucleoli, as observed by Mr. Paget in his description of myeloid tumours, were readily seen. With Mr. Paget, I prefer to believe, however, that the true nature of morbid growths generally is to be apprehended more correctly by examining them as living things, and modes of life rather than conditions of structure determine me in classifying them.

The tumour was evidently a myeloid one, the nature of which has been well described by Mr. Paget, and more recently by Mr. Christopher Heath in his excellent work on Injuries and Diseases of the Jaw, the Jacksonian Prize Essay of the Royal College of Surgeons of England published in 1868.

April 20.—Dr. PACKARD exhibited a splint devised by him, and successfully used, for keeping the lower limb at rest after excision of the knee. A similar arrangement might be employed in cases of compound fracture.

The splint, for which accurate measurements should be taken in each case, consists of a wooden portion, upon which the entire limb rests; leathers are tacked on near its edges, to come up around the limb and give it lateral support, being laced together by tapes passed through eyelet holes. Additional steadiness may be given by the application of pasteboard splints to the upper surface of the limb.

The peculiarity of the apparatus, however, consists in the arrangement for changing the dressings without disturbance of the limb. A portion of the wooden splint is sawn out, opposite the knee or other desired point, and the parts above and below are strongly bracketed together; a slide is then adapted to the gap, as in the cut, so that, the limb lying perfectly undisturbed, the slide may be withdrawn, the dressings changed, and the slide replaced. (See figure.)



An iron arch, screwed to the lower end of the splint, serves to protect the foot from pressure or lateral displacement; and by tying a piece of

bandage between it and the brackets, a sort of tent-like arrangement is made so as to keep off the bedclothes from the limb.

By crossing the tapes attached to the leathers of the slide, and tying them to the brackets, a greater degree of lateral support may be given to the affected part. When used, the whole splint is of course carefully padded with folded flannel, or raw cotton, each portion separately.

The plan of this apparatus is so simple, that it may very possibly have suggested itself to other surgeons, although no published description of it has met my eye. I have indeed seen an account of a "bracketed" splint for the femur, based upon that of Desault; but cannot now find it or the reference to it.

(N. B.—My attention has been called to an article by Dr. Mettauer, of Virginia, in the *American Journal of the Medical Sciences* for April, 1869, on a "bridged" splint for compound fractures. The plan and construction of this are, however, entirely different from the one which I have described, three slips of wood being hollowed out at points opposite the seat of injury, and applied with bandages.)

ART. XVI.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1869. *November* 26. *Suicidal Hanging.*—Dr. PACKARD gave the following account of a post-mortem examination, at which he had been present by invitation of the coroner:—

Mr. ——, æt. 37, a very strongly built and muscular man, on the 8th of November, 1869, hung himself to a banister in his own house, with a piece of picture cord. The cord was composed of a strong twine, wrapped with soft cotton to give it bulk; it was so short that he could scarcely have had more than six inches fall. He cannot have been hanging more than a very few minutes when he was discovered, and a neighbour summoned, who cut the cord. Death had already occurred.

Autopsy, forty-eight hours after death, the body having been in ice. Rigor mortis very strongly pronounced; the upper surface was very pale, but hypostatic congestion of florid hue was present, except where the body had pressed on the bottom of the box; at all such points the paleness was intense. The face was pale, and not at all swollen; its expression was placid. The parchment-like line of the cord, with a slightly-swollen red ridge on either side of it, ran all round the neck, on a level with the thyro-hyoid membrane, which was very strongly crowded backward, so as to make the upper edge of the thyroid cartilage seem to project.

Scalp normal; veins of dura mater congested, but not intensely so; a curious thin clot staining the bone on either side within the skullcap, corresponding accurately to the attachment of the temporal fascia. It formed an arched line perhaps three-eighths of an inch in width; and a corresponding mark existed on the surface of the dura mater. Brain-substance congested. On the upper surface of the convolutions at either side of the longitudinal fissure, were some slight arborescent ecchymoses, and a very small clot effused. A small quantity of bloody serum in each of the lateral ventricles, and the choroid plexus somewhat congealed. Larynx very large and finely developed; the only perceptible lesion about it was the stretching of the thyro-hyoid membrane by the pressure of the cord.

There was no tearing of the muscles of the neck, nor could we discover any displacement or fracture of any portion of the cervical vertebræ. Lungs healthy, but deeply congested, especially at their posterior parts. Heart well developed, strongly contracted, and empty; on its surface a somewhat unusual amount of fat; valves all healthy. Blood dark-coloured and perfectly fluid. Abdominal viscera healthy; liver full of blood, although its surface was somewhat paler than normal.

This examination was made in consequence of a suspicion entertained by some of the family that the death was really caused by poison, and that the hanging was done subsequently as a blind. But of this, it is clear, there was no evidence. All the post-mortem appearances were those of suffocation by the pressure of the cord on the thyro-hyoid membrane. In judicial hanging, where there is a fall, other lesions are generally present, owing to the violent stress put upon the vertebræ, muscles, and ligaments, and the length of time during which the suspension is continued. As an instance of pure suffocation by hanging, therefore, this case is not without interest.

Dr. ASHHURST referred to the observations of Louis, quoted by Boyer, as showing that the occurrence of vertebral dislocation in cases of hanging, was due to *twisting* of the neck rather than to any force exerted in the line of the axis of the body, and instanced a case recently reported by Dr. Forbes to the College of Physicians [*American Journal of Medical Sciences*, October, 1869, p. 420], as confirmatory of this view.

Dec. 9. Case of Dislocation and Fracture of the Body of the last Dorsal Vertebra; the subject of the injury surviving a year, dying of Pyæmia the 369th day after the accident.—Dr. CLEEMANN exhibited the specimen and read the following history: David A., æt. 48 years, while working in an ice-house, attempted to jump from a ladder to the "gig," but a short distance away from him: just as he made the spring this apparatus was suddenly lowered, and consequently he passed beyond it and down, through a clear distance of about twenty feet, to the level surface of the ice below, striking upon his feet. I saw him July 23, 1868, about an hour after the accident. The depression of the shock had not then quite passed away; there was tenderness on pressure in the lower portion of the dorsal region, and complete paralysis of the lower extremities. At nine hours later, his general condition was excellent. A more careful examination of the lower extremities demonstrated that, while the paralysis of motion was complete, anæsthesia existed only below the knees, the surface of the thighs being even slightly hyperæsthetic; tested by the hand the temperature of the right extremity was above, that of the left was below, the normal standard. The next day Dr. John Ashhurst, Jr., saw the case with me, and detected some irregularity in the line of the spinous processes, in the region of tenderness.

For some time the case progressed favourably though slowly. The patient suffered at first with uneasiness in the abdomen and general restlessness, but these conditions did not continue long. Two weeks elapsed before the rectum was evacuated of its contents, and then involuntary discharges took place. The urine was drawn off for the first ten days, by which time it had become so viscid from cystitis, that it ceased to flow readily through the catheter; the instrument being then discontinued, the urine dribbled away without difficulty.

The patient complained of some peculiar sensations, apparently not

warranted by the condition of the affected parts, as for instance, a feeling of excoriation along the inside of the thighs, and pain in the region of the right hip. Superficial bed-sores appeared but soon healed.

Improvement, as regards the paralysis, was first noticed in the return of cutaneous sensibility in the legs; afterwards in the restoration of muscular power in the thighs; and this amelioration was more rapid in the first months than subsequently. Two months after the accident the patient's back was strong enough to admit of his being carried out.

The following was the condition of the patient on March 30, eight months after the accident: General health is unexceptional; can sit up without support, and with the help of his hands, turn himself over in bed; while lying supine he can raise the right extremity, extended, clear from the bed; he can bend the corresponding knee, but the articulation is somewhat stiffened; the foot is powerless, fixed in an extended position, with the large toe flexed and inclined outwardly; can flex the left knee, which is stiffened in no degree, but cannot lift the whole extremity from the bed; the foot of this side is as powerless, but not so much drawn as the right. Sensation exists as far as the ankles in both limbs; the right is warmer than the left, and both legs are wasted. There is incontinence of urine, but patient is able at times to hold his water for an hour. The bowels are costive; the sphincter ani partly under control. The nail of one of the great toes came away some days ago, while being pared.

On the 28th of the following June, eleven months after the accident, patient complained of a continued feeling of drowsiness; and I was informed that two weeks before a "boil" had begun to form upon the right buttock, with a swelling in the groin. This so-called boil was now a circular ulcer, about one inch in diameter, covered with a yellowish slough; near it was another gangrenous spot of the same size, black and dry; and the skin, including these places, was of an intense red colour. On June 30th pyæmic symptoms appeared.

In dressing the ulcers, July 15, more discharge was observed to flow from one of them than before; the pus, which was not unhealthy in appearance, was traced to an abscess in the upper and posterior region of the thigh; though it ceased to discharge at times, the pus was flowing at the time of the patient's death, which occurred on July 27, 1869, the twenty-seventh day from the access of the first chill, and the 369th day after the reception of the injury.

Autopsy twenty-six hours after death.—Much emaciated; an irregularity of the line of the spinous processes of the vertebræ very manifest; *rigor mortis* well marked.

Head not examined: *thorax*—pleuræ adherent at the base of the lungs, and the corresponding portion of the pulmonary tissues congested; engorgement more marked in localized spots scattered through the parenchyma, presenting the appearance of the first stage of "secondary abscesses;" liver showed no sign of disease; rest of the abdominal viscera not examined. Bladder moderately distended. In the spinal column, above the position of deformity, there was an abscess of some size situated in the cellular tissue in front of the vertebræ; no connection was traced between it and the displaced portion of the spine. The spinal cord was not examined until two months after the patient's death; and though it had been placed meanwhile in a preservative solution, it was not then in a very fair condition for observation: it was noted, however, that the nervous tissue appeared firmer than normal at the position of

injury, and that the spinal membranes were, in some sense, consolidated with it, and more closely attached to the walls of the canal; in one place the dura mater was separated by a collection of fluid, which I took to be altered pus, and seemed to extend to a carious cavity in the body of the last dorsal vertebra. There was a dislocation of the left inferior articular process of the last dorsal over the corresponding part of the first lumbar vertebra, while the body of the former appeared crushed between the two adjacent vertebræ. On the anterior surface of the injured segment callus appeared, giving rise to an oblique ridge, which passed from the left side downwards towards the right, and attached this vertebra to the first lumbar; another more extensive mass, connected with the first, rose over the right side of the eleventh dorsal, involving in its breadth the articulation of the twelfth rib and the adjacent parts. A section made antero-posteriorly through the centre of the vertebræ displayed the body of the last dorsal compressed into a wedge-shape, the base of this figure presenting towards the spinal canal, and encroaching upon it superiorly; this projection arose from the body of the vertebra being spread out as it were, and from the slant forward of the vertebra next above; the diameter of the spinal canal was narrowed in this manner from before backwards at least one-half; the greatest compression being on the right side. The inter-vertebral foramen along the injured vertebra on the right side was impinged upon and distorted; and a portion of the arch of this vertebra on the same side had been absorbed.

It is evident from the condition of the vertebræ that the injury was the result of "indirect force"—the body having been violently bent forward, while at the same time it was forciby twisted towards the right side.

In the management of the case no attempt at reduction of the dislocation and fracture was made. Among the pyæmic symptoms, the peculiar sweetish odour of the breath, described as so uniformly present, was not observed, and the yellowish tinge of the skin and conjunctiva also considered so characteristic of pyæmia was present in but a slight degree.

Fragments of a Bug removed from an External Auditory Meatus.—Dr. HARLAN exhibited the specimen, and gave the following history:—

Mr. J., a medical student, consulted me on account of a slight feeling of discomfort in his right ear—a feeling of fulness, and an itching sensation which disposed him to pick at it with the point of a pencil, or anything of the kind that he might chance to have in his hand; and a little dulness of hearing occasionally, which he attributed to both ears. He stated that usually his hearing was excellent, and that there was no difference in the hearing power of his ears. On testing the hearing distance with the watch, it was found to be several feet less on the right side than on the left, though quite good. I found a brown mass in the meatus, which I took to be hardened wax, and attempted to remove it with the syringe. As this made no impression upon it, I removed it piecemeal with the rectangular forceps, not without some delay and difficulty on account of the acute pain that the slightest pressure gave. It proved to consist of the head and first section, two wings, and three legs of a large beetle. The head lay almost in contact with the membrana tympani. Mr. J. immediately called to mind that thirteen years before, when a child, he was aroused at night by an agonizing pain in the ear, which was not relieved until a doctor, who was sent for, poured oil into the meatus. He has never had any pain in the ear since, or discharge, or other inconve-

nience than the slight annoyance that induced him to consult me. After the removal of the foreign body nothing abnormal could be discovered but a slight congestion easily accounted for by the irritation caused by the extraction. A careful examination made several months afterwards discovered absolutely no difference between the right and the left ear, either in the appearance of the external meatus and membrana tympani, or the hearing distance.

Rupture of Liver.—Dr. C. T. HUNTER exhibited the specimen and read the following history:—

J. T., admitted into Pennsylvania Hospital November 26th, 1869. That morning the patient had fallen from a heavily loaded ash-cart, which passed over the anterior surface of his body at the lower portion of the thorax, obliquely from right to left. An hour later he was brought into the hospital and presented marked symptoms of shock. He had, however, no hemorrhage from the nose, mouth, or ears. There were no external injuries save some slight contusions at lower margin of chest. He complained of *intense* pain and great tenderness in right hypochondriac and both lumbar regions. Later in the day he had nausea, and everything that he ate or drank was almost immediately rejected. The injecta contained no traces of blood. His thirst was excessive. He could lie with comparative comfort only on left side. Late in the evening I drew his urine off, he being unable to void it, and found it free from blood. I then, for the first time, detected a fracture of the ninth, tenth, and eleventh ribs of the right side. There was no emphysema or pneumothorax. He died on the following morning at 5 o'clock, without a struggle.

Autopsy.—Right lung and pleura uninjured. Ninth, tenth, and eleventh ribs of right side fractured transversely. Abdomen distended with bloody serum and recent blood-clots, the latter collected principally about the liver. The liver presented an extensive laceration which begins at anterior margin of the fissure that accommodates the gall-bladder on the concave surface, and runs directly backwards parallel with the longitudinal fissure, for at least four inches, involving the entire thickness of the right lobe. The gall-bladder is not injured. The biliary ducts most probably are involved. The right kidney, on its posterior surface, presents a superficial laceration of about two inches in length. The convex margin of left kidney also presents a slight laceration.

The specimens being referred to a committee to investigate the minute changes in the organs injured, Dr. W. F. Norris reported that the committee had carefully examined the specimens without finding any material lesion.

1870. *January* 13. *Epithelial Cancer of the Hand.*—Dr. DUER presented the specimen and read the following history:—

This arm was removed from Mr. T., æt. 65, Dec. 31st, last. The specimen is a cancroid or cancerous growth from the hand, covering the whole of its posterior and a portion of its lateral aspect. It appears from its history, as derived from the patient himself, that it had existed in the form (and probably condition) of a simple wart for more than four years, attracting no other attention than grew out of the fact of several members of his family having already died of cancer. Somewhat less than a year since he became alarmed at the appearance of a slight inflammation at its base, and accordingly requested the opinion of his family physician, who represented that it probably contained a little pus,

and which he sought to evacuate by puncture with a needle. None, however, appeared, and the point of puncture soon became a centre of ulceration, painful and fungoid. The ordinary applications to such conditions failed either to furnish relief from the pain or arrest of the extension of the ulcerative process, and the cancroid mass has steadily grown on to the condition you now perceive it. For the last four months and occasionally during the summer the patient has required large and continuously repeated doses of some anodyne, to maintain even tolerable comfort. During the later periods he has never had a full night's sleep up to the date of the operation. The character of the pain was of the ordinary lancinating kind, and somewhat influenced by the position of the limb. Another distressing feature of the case was the extreme offensiveness of the discharge. The ulcer itself, in life, presented the appearance of a partially developed cauliflower dyed a bright crimson and varnished, so "angry" did it look.

When I first saw the patient, on the day mentioned, his aspect was scarcely that of a cancerous subject, but of a man with a naturally vigorous constitution, well nigh worn out, and dispirited with pain. His general health was otherwise good; that is, his functions had been normally performed and he had scarcely been sick in his life. The cancerous cachexia could scarcely be said to be at all pronounced. He was anxious to submit to any measure that would promise him relief from the tormenting conditions just mentioned. And as to the propriety of removal of the limb at or about the elbow there seemed to me and my colleagues no question. Of the considerations that influenced the point of selection, and the particulars of the operation itself, I will not consume the time of the Society in discussing. Apart from the perfection of the specimen, the point of most interest in the case is one just alluded to, viz., the existence of cancerous disease in other members of the same family. This is the fourth one that has come under my observation, and two additional ones have been reported to me. The first, a brother of my present patient, died, several years past, with a condition almost precisely the same as this and situated in the same place. No operative interference was permitted. The second case presented a scirrhus of the mammary gland, which I removed at Burlington, three years ago this fall, the patient living about four months thereafter, and dying of a secondary deposit in the lungs. Her death was a painless one, and there was no return of the disease at the seat of removal. The third case was a niece of Mr. T., and was much the same as the last. I removed her breast also at Bordentown, in the fall of 1866, and she died as the last, a painless death, the following summer, from secondary deposit in the lungs, without a return of the disease in the cicatrix.

I have since heard from Mr. T.'s case, and the report is highly satisfactory, both as regards the reparative process in the wound, and the comfort of the patient. He represents that he has not been so free from pain or slept so well for four months as since the operation.

The specimen was referred to a committee, consisting of Drs. L. S. Bolles, F. A. Hassler, and O. H. Allis, for microscopic examination, who reported "that the specimen examined showed a fibrous stroma, with numerous epithelial cells, polygonal, elongated, and irregular in shape; the contents of the cells in some instances contained distinct nuclei with a single nucleolus, but by far the larger portion were filled with granular matter."

Dr. PACKARD desired to ask if he had rightly understood Dr. Duer to speak of the deaths as "painless," in the cases of internal cancer after operation, to which Dr. D. had referred. He had several times seen the most intense suffering in such cases, but never anything like comfort. Of one case in particular, that of a woman who died of intrathoracic cancer in the Pennsylvania Hospital in 1855 (after removal of the breast some eighteen months previously), he had a most vivid recollection. In another case, now under his care in private practice, the sufferings of the patient were extreme, in spite of the free use of anodynes.

Dr. DUER replied that Dr. Packard had rightly understood him. In one case he had witnessed a *post-mortem* examination, where the patient appeared to die of apnœa. The lungs were found filled with gelatinoid masses of every size, from a millet-seed to that of a pigeon's egg. Dr. D. knew no particulars in the second case.

Dr. WILLARD recalled a case where the left breast was removed, and six months later the disease returned in the cicatrix. The patient apparently died of exhaustion from repeated hemorrhages, and at the *post-mortem* there were found extensive cancerous nodules in the liver. At no time had she suffered pain in hepatic region.

Dr. ASHHURST said that he, too, could recall an instance of painless death from internal cancer, recurring after the removal of an external growth: he had removed in February, 1866, at the Episcopal Hospital, a scirrhous breast from a woman 64 years old, in whom the disease had existed four years. The wound healed readily; but in May, 1867, she returned with a small cancerous tubercle, an inch and a half above the line of the cicatrix of the former operation: this tumour was likewise removed, and the wound again healed without difficulty. During the same summer, however, she was again admitted to the hospital, without any external evidence of disease, suffering no pain, and complaining merely of loss of appetite and debility. Death followed, without any change of symptoms, and the autopsy (notes of which had been furnished by Dr. C. H. Burnett) revealed a cancerous growth on the pleural surface of the costal cartilages beneath the old cicatrix, the organs of the body generally being found healthy.

Dr. ASHHURST referred to Dr. Duer's remark, that this patient presented no evidences of cancerous cachexia, and alluded to the view of the late Mr. Collis, of Dublin (with which view the results of Dr. Ashhurst's own observations coincided), that cachexia only attends those cases of cancer which involve important viscera and thus interfere with the process of sanguification. Hence extensive *external* cancer may exist for years, and even prove fatal, without there having been at any time any cancerous cachexia (so called), while a very limited amount of carcinomatous disease in an internal organ may cause an early development of cachexia in its most marked form.

Dr. KEEN also recalled a case which presented itself at the St. Mary's Hospital, in a huckster woman weighing from 175 to 200 pounds, who was in remarkably good health, though she presented a very large cancer of the breast. There was no evidence of cancerous cachexia, though the growth had been present eight months. It appeared to have been produced, as far as circumstantial evidence can be regarded, by local injury, the patient having fallen in passing down stairs, and having struck her breast on some sharp obstacle, immediately after which the tumour began to develop. At the time Dr. K. saw her it was as large as a fist, with an ulcerated surface as large as the palm of the hand.

Dr. RHOADS mentioned that he had a case under observation, in which mammary cancer had existed more than six years, presenting a very large mass, ulcerated and angry in its appearance, and the patient evidently near her death, without manifesting, however, the slightest appearance of cachexia. The mother of the patient perished with cancer of the stomach.

Dr. STILLÉ referred to the case of a woman who called at his office presenting a tumour of the right breast about as large as a pigeon's egg. The woman was remarkably stout, exhibiting every appearance of health in complexion and expression. He was unable to decide as to the nature of the tumour, and referred her to a surgical friend, who decided it was cancer, and recommended its removal by an operation. This was done, the tumour having increased somewhat in the interval. When the wound had almost healed, the edges began to granulate extravagantly, and in a few weeks there was formed an enormous cauliflower excrescence, as large as a child's head at three months. Up to the last moment there was no cancerous cachexia, nor anything in the patient's face to suggest the nature of the disease of which she was dying.

Tumour in the Right Anterior Lobe of the Cerebrum.—Dr. C. B. NANCREDE presented for Dr. J. R. F. BELL the specimen, with a history of the case: A woman æt. 27 was admitted to the Episcopal Hospital in Dec., 1868. She was subject, at irregular intervals, to epileptiform convulsions, which were, for the most part, unattended by loss of consciousness. There was always more or less cephalalgia in the intervals, but after each of these attacks it was increased to an intense degree. The pupils were normal, excepting when under the influence of conium, when the left pupil was largely dilated. Some time in November, 1869, after a much more severe attack than usual, which was attended with unconsciousness, entire loss of power over the left side, with the exception of the fingers, as well as impaired sensation, was found to have occurred.

She remained in about the same condition, with increased cephalalgia, until the second week of December last, when another convulsion was followed by total paralysis of the left side. About ten days afterwards she died, apparently from the lung trouble, though slightly comatose.

The *post-mortem* examination showed both lungs extensively diseased, with a cavity in one. There was found to be inflammation of the membranes of the brain, with easily separated adhesions along the longitudinal fissure and base. On the upper surface of the right lobe was an old adhesion, so tough as to require careful dissection to separate it.

On making a section beneath this, there appeared to be a cicatrix; upon dividing which, a hardened mass was found, which could be turned out of the softened brain substance. Immediately surrounding this mass there was softening and reddening of the brain substance. The rest of the organ seemed healthy, though more softened than could be accounted for by *post-mortem* change.

Dr. ASHHURST referred to the differing views of pathologists as to the connection of convulsions with lesions of various parts of the brain: thus Mr. Solly looks upon convulsions as especially characteristic of inflammation of the tubular portion of the hemisphere. Dr. Watson, on the other hand, considers that convulsions are more apt to attend inflammation beginning in the pia mater or arachnoid. Finally, Mr. Callender, one of the latest writers on the subject, regards convulsions as particularly associated with disease about the track or distribution of great ves-

sels, especially of the middle cerebral arteries, and with the shock of a hemorrhage, and finds them particularly connected with left hemiplegia, and with disease of the right hemisphere, external to the optic thalamus and corpus striatum.

The specimen was referred to a committee, consisting of Drs. William Pepper, Schell, and Parry, which made the following report:—

The tumour was irregularly lobulated, and measured about one and a half inches across its base, which was closely adherent to the under surface of the dura mater, the mass itself being imbedded in the brain substance. It occupied a portion of the upper and outer part of the right hemisphere, corresponding to the middle portion of the corpus striatum; and extended fully one and a fourth inches into substance of the hemisphere, being also surrounded by a layer of softened brain tissue. Upon making a section of this tumour, it was found to present two round nuclei of cheesy matter, one-third of an inch in diameter each, surrounded by a quite firm grayish tissue.

Microscopic examination of the central cheesy portions showed them to be composed entirely of oval or irregularly triangular cells, containing much granular matter. Upon treatment with acetic acid, these cells closed up to a considerable extent, and revealed a varying of persistent granules of large size, but no true nuclei. The size of the cells varied, many being smaller than a white blood cell, others somewhat larger. A certain number of spindle-shaped cells were seen mixed with those above described, but neither any true stroma nor any vessels could be detected in these cheesy nodules. There was also a large amount of free granular fat. The dense grayish layers surrounding these nodules proved to consist of a highly vascular fibro-cellular tissue; the vessels of which were large, tortuous, with thin walls and very imperfectly developed perivascular sheaths, and the cells chiefly large spindle-shaped connective tissue cells.

January 27. *Enlarged Inguinal Glands.*—Dr. R. M. TOWNSEND presented the specimen and made the following remarks:—

These glands are principally important on account of their anatomical relations. In making a dissection for inguinal hernia, they lay along the course of the external iliac artery, the part protruding through the external abdominal ring. As they pushed the peritoneum before them, the constriction between the two much resembled a strangulated hernia. On removing the first of them, it presented much the appearance of a testicle. They were firmly adherent to the sheath of the internal iliac artery and fascia of the internal iliac muscle.

The specimen was referred to a committee, consisting of Drs. Edward Rhoads, R. M. Townsend, and J. V. Ingham, who reported "That they found the said specimen to consist of a cluster of enlarged inguinal glands, presenting under the microscope the granular and corpuscular elements found in hypertrophy of the lymphatics without malignant structure."

Case of Excision of the Elbow.—Dr. ASHHURST exhibited the recent specimens from a case of excision of the right elbow-joint for chronic synovitis, followed by ulceration of the cartilages and erosion of the articulating extremities of the humerus and ulna. The patient was a man aged 25, who had been disabled by the condition of his joint for five or six months. The origin of the disease could not be ascertained. The operation was done by the simple longitudinal incision, and the portions

of bone exsected were very limited in extent: the head of the radius being healthy, merely its articular surface was removed. The chief points of clinical interest were in reference to the diagnosis, and the peculiar line of incision. The painless character of the swelling, and the degree to which passive motion could be carried, had led some of the gentlemen who saw the case to doubt the interarticular nature of the affection. The peculiar shape of the part, however, with the helplessness of the limb, and the development of grating upon making flexion and extension while the patient was etherized, were, Dr. Ashhurst thought, sufficiently significant of the true state of affairs. The longitudinal incision, which was adopted in this case, Dr. A. considered preferable to either the T or H incisions, as making a smaller wound, and one which had no tendency to gape. The operation, though somewhat more prolonged by this method, was sufficiently simple, and presented no particular difficulties.

The specimens showed very well the characteristic inflammation and degeneration of the articular cartilages and synovial membrane, the bone being hyperæmic and eroded at certain points.

Feb. 10. *Chronic Inflammatory Deposit in Testicle.*—Dr. C. T. HUNTER presented specimen, and read the following history:—

T. C. M., æt. 24, grocer, admitted into Pennsylvania Hospital January 28, 1870, for chronic orchitis; single; temperate habits; no history of tubercle or carcinoma. Denies having had syphilis, but acknowledges having had ulcerated sore throat some eighteen months ago, which has left a communication between his nose and mouth, through the soft palate. Within the last eighteen months, has had two separate attacks of iritis in the left eye. About four years ago contracted gonorrhœa. This was treated with balsam copaiva, and after the subsidence of the acute symptoms, used astringent injections. At the end of six weeks, the gonorrhœal discharge had ceased, but in the fortnight following, his right testicle swelled to the "size of his fist," as he expressed it. During the attack of gonorrhœa, suffered considerably from irritation at the neck of his bladder; this vesical trouble persisted for seven or eight days after the urethral running had been checked. The treatment for orchitis consisted of applications of lead-water and laudanum to the scrotum. At the expiration of a week, the testicle had nearly resumed its normal size. Some eighteen months later, patient for the second time noticed that his right testicle was slowly enlarging, his attention being attracted to it by dull-aching pains in the gland, a feeling of weight, etc. He seemed to think that the second attack was caused by lifting and carrying heavy parcels. Local depletion by means of leeches to the cord, anodyne and astringent applications to scrotum, were only partially successful in reducing the size of the gland. From that time till the date of his admission into the hospital, the gland has been somewhat enlarged, and quite sensitive. Small abscesses in the walls of the scrotum have been evacuated from time to time, and two days before coming into hospital, four or five ounces of a straw-coloured fluid were drawn off from scrotum. At a consultation of the surgical staff, it was determined to remove the diseased gland; the patient himself was very anxious to have the operation performed, as the disease had been a source of great annoyance to him for the last year and a half. On the 2d of this month castration was performed by Dr. Hewson.

The cord was secured by a medium-sized acupressure pin passed under it, near spine of pelvis, and a silver wire looped over it, pressing the cord

firmly against the pin; after which the testicle was exposed and removed by a division of the cord a short distance below the pin. Very little hemorrhage followed. The wound of the scrotum was closed by sutures, and the dry earth powder applied.

The specimen was referred to a committee, consisting of Dr. Tyson, C. T. Hunter, and Wharton Sinkler, which reported that they found the deposit to consist of two masses, each about four lines in diameter, and occupying the body of the testis or its proper secreting portion. These masses are separated by an interval about two lines wide.

Microscopic examination reveals, in addition to the small non-nucleated corpuscles, resembling the bodies usually described as tubercle corpuscles, a certain number of compound granule cells, and much free granular and globular oil. There seems to be in the deposit no traces of the tubular structure of the testicle.

There seems, therefore, but little doubt that this deposit is of the chronic inflammatory kind.

Dr. C. B. NANCREDE presented for Dr. J. R. F BELL a specimen of *Cancer of the Pancreas*, and read the following history:—

The patient from whom it was removed, a man æt. 50, came to the Episcopal Hospital some time in September, 1869, complaining of pain in the left hypochondrium, with loss of flesh, strength, and appetite; also of vomiting, and that the ejecta were sometimes tinged with blood. On examination, a hard tumour, about the size of a walnut, was perceptible rather to the left of the epigastrium, which rose and fell with the movements of respiration at first, but later seemed fixed. This tumour he had first noticed in the previous March, and stated that then its position was higher up.

Pulsation could be distinctly felt, which remained unaltered by position, showing that the tumour was adherent to some vessel. There was also a bruit heard over this tumour, which was not propagated along the aorta, nor was there any thrill. This tumour was the seat of severe lancinating pain, not increased by the ingestion of food. Digestion remained good, and the man gained flesh, until some eighteen days before death, when nothing but stimuli could be taken. Until within a week of death, no diarrhœa was present, even when olive oil was given as a test. Fats were largely partaken of and relished by the patient.

During the last three months of life marked œdema, with occasional suppression of urine, occurred. There was a marked cachexia.

The post-mortem showed a large hard mass in the position of the pancreas, adherent to the liver, involving the stomach, in one position of which a marked inflammation and erosion were found. There was considerable ascitic fluid, rendered turbid by lymph.

The specimen was referred to a committee consisting of Drs. William Pepper, S. W. Gross, and Horace Williams, which reported that "upon making a section, the tissue of the tumour was found to be dry, not yielding any 'cancer-juice' on pressure, somewhat fibrous, but quite friable. Microscopic examination showed a scanty stroma in places consisting of delicate fibres, in others of long, fine, spindle-shaped cells. There were also very numerous oval and round cells, varying in size from less than that of a white corpuscle to double that size, and containing but a single nucleus. There were also many smaller nucleus-like bodies lying free among the cells. The tumour was far advanced in fatty degeneration;

the cells contained dark granular matter or fine granular fat, and there was much free oil, with numerous large crystals of cholesterine."

Feb. 24. *Rheumatoid Arthritis; Eburnation.*—Dr. WILLARD presented the specimens and furnished the following history:—

These specimens were discovered while engaged as assistant demonstrator in the anatomical rooms of the University of Pennsylvania, and therefore are unaccompanied by previous history. They are the scapulæ and humeri. The head of the right humerus was found displaced from the glenoid cavity, and occupying a position upon the anterior inferior face of the neck of the scapula, where it had formed a new articulation; osseous tissue being thrown up about it in such abundance that the cavity was nearly as deep as the original glenoid. Glenoid cavity itself was filled with osseous deposit to such extent that but little of its former appearance remained, and the whole head and neck of scapula were greatly roughened with same growths. Coracoid process also somewhat implicated. The displacement of humerus had apparently been effected by a gradual absorption of the rim of the glenoid, and the subsequent deposit of this new bone had confined it in its abnormal position. On left side same changes had begun to take place, but had not yet reached such an advanced state, and humerus was not displaced, although glenoid cavity was excessively roughened. The head of humerus and inferior face of acromion presented a most beautiful specimen of eburnation, being polished to the utmost brilliancy. All articulations of the skeleton were similarly affected, in varying degrees.

Cystic Distension of Fallopian Tube.—Dr. WILLIAM PEPPER presented a uterus and appendages. The right Fallopian tube is healthy. The free extremity had become attached to the side of the uterus, and had become distended with clear watery fluid, so as to form a thin-walled cyst three inches in diameter. The Fallopian tube was also largely distended throughout its entire extent.

March 10. *Two Cases of Bony Deposit in the Eye.*—Dr. HARLAN presented the specimens, and read the following history:—

The first is from a patient operated upon at the Wills Ophthalmic Hospital, and the following record was made of the case by the resident surgeon, Dr. Wilson: "S. S., female, æt. 46, applied for admission to the hospital September, 1869, suffering severely with pain in the left eye and sympathetic irritation of the right. States that, thirty years ago, the left eye began to fail after some inflammatory trouble (of which no definite account can be obtained). Five months afterwards, the sight of that eye was entirely gone; from this time, however, the eye gave her no trouble until three months ago, when, after using the other eye for some time in sewing by lamplight, the blind one began to be very painful and has troubled her constantly since. About three months before admission, the right eye began to fail. She noticed that it soon became fatigued with sewing or reading, and that it was very painful in a bright light, as sunlight, though not at all so when shaded. At the time of admission, she could not use her eye for small objects a minute without suffering a stinging sensation in it and intense pain in the other eye. The left eye was hard and somewhat atrophied, and the cornea opaque. No pain on pressure. Above the cornea, and slightly to the nasal side, there was a small sclerotic staphyloma."

The left eye was extirpated, with immediate relief from pain. I am unable to say how far she regained the use of the other eye, as the patient lived at a distance and left the hospital in a few days.

Dissection of Globe.—Sclerotic wrinkled from shrinking of contents, its structure apparently not altered. Cornea opaque and flat. Nothing remarkable in the appearance of choroid. Iris adherent to cornea; when separated from it, which is easily done, the membrane of Descemet follows it and is seen as a transparent curtain across the pupil. Lens of normal size, or perhaps rather large, yellowish-white, and as hard as a pebble. Hyaloid fossa lined with a firm tough membrane, having very much the appearance of cartilage. No remains of vitreous.

The retina having, as is usually found to be the case in atrophied bulbs, left the choroid and followed the shrinking vitreous, is recognized in shreds of tissue stretching from the optic nerve entrance to the ora serrata. Within the choroid, and nearly equal to it in extent, is a thin but firm bony shell, terminating anteriorly in a ragged edge, and deficient posteriorly at the position of the optic disk.

The other specimen is from a patient of Dr. Morton's, upon whom I assisted him to operate. The globe was extirpated on account of sympathetic irritation of the other eye. There was nothing unusual in the history of the case; it was one of long-continued inflammation. There was no opportunity for careful dissection. The bony formation in this case is a disk that occupied the fundus of the eye, extending to about one-third of the distance from the optic nerve entrance to the ora serrata. Like the other specimen, it lay immediately within the choroid, and is deficient at the point corresponding to the optic disk.

The following is the result of a microscopical examination made by Dr. W. W. Keen:—

CASE I. The bony development showed very distinct but imperfectly developed lacunæ, but no distinct Haversian canals were seen. The retina was much firmer than normal, but this is partly if not wholly due to the alcohol in which it has been kept. The main bulk of it was seen to consist of the atrophied bloodvessels, with some fibrous tissue and an enormous quantity of small oil globules. Quite a number of crystals of cholesterine were also seen. The lens consisted of an outer hard capsule and an inner friable mass, white and chalk-like. The latter was mostly carbonate of lime, as it effervesced with acids. The outer capsule consisted of an indistinct granular substance, effervescing with acids, but possessing no true bone corpuscles. The choroid consisted almost wholly of fibrous tissue, with a few bloodvessels partly atrophied. The pigmentary layer had disappeared, save here and there a single cell.

CASE II. The bony portion showed very imperfectly developed lacunæ, but a number of well-developed Haversian canals. The retina was rather firmer than usual, probably owing in part to the alcohol. It consisted of a very few vessels, with a little fibrous and granular matter, and a large number of oil globules and multitudes of crystals of cholesterine, occurring both singly and in groups. Choroid as in the first case.

A number of similar formations are recorded, and there has been a good deal of discussion from time to time in regard to their nature, particularly in reference to the existence of Haversian canals. Mackenzie says, "They present traces of lacunæ under the microscope, but no Haversian canals." Stellwag speaks of "indications of Haversian canals." He says: "The ossification of these new formations begins from the ex-

ternal layers, while new connective tissue layers are placed on the inner surface." Virchow speaks very decidedly on the subject in the following extract which Dr. Keen has translated for me from the work on "Morbid Tumours:"—

"They are most frequent as small osteomata on the free surface of the choroid. They are mostly flat bones, which seem to lie on the vascular tunic, or to have taken the place of the retina, and therefore have often been described as ossifications of the retina. They generally lie in the posterior part of the eye; sometimes, however, stretching quite far forwards. They consist of good, firm, osseous tissue, moderately rich in vessels, proceeding, as a rule, from connective tissue, but sometimes from cartilage. That they are the result of chronic choroiditis is certain."

From their position next the choroid, and from the great difficulty, in many cases, of detecting any traces of the retina, it is not surprising that these formations have often been mistaken for ossifications of the retina; and, indeed, Stellwag says, that when any part of the degenerated retina remains in contact with the bony plate, it also becomes bony. If new layers of connective tissue are formed on the inner surface after the outer layers are ossified, it would seem that these bony plates are capable of independent growth. As they are among the recognized causes of sympathetic ophthalmia, it is worth while to bear in mind the possibility of their presence in deciding upon the operation to be performed. It is evident that not much could have been accomplished in either of these cases by any operation less thorough than that of extirpation of the globe. An interesting point in the history of the first case is the fact, that nearly thirty years intervened between the inflammation that destroyed the sight of the left eye and the appearance of sympathetic irritation of the right.

Suppression of the Urine; Jaundice.—Dr. HUTCHINSON presented the liver and kidneys of a man, æt. 40, who died in the Pennsylvania Hospital March 7, 1870. The following points of his history are of especial interest in connection with the disease of which he died: In the year 1860 he contracted gonorrhœa, which did not yield very readily to treatment, and seems to have given rise to a stricture of the urethra; for, on several occasions during the last seven years, catheterization has been resorted to to relieve his bladder of its contents. He has lived a roving life, but has never been excessively intemperate, nor has he ever had a chancre. On the 23d of February he found he was unable to pass his water, but does not appear to have sought medical assistance until the next day. It is not known whether or not the physician applied to succeeded in introducing a catheter into his bladder; but as no relief was obtained, he applied for and gained admission into the surgical wards of the Pennsylvania Hospital on the evening of February 24th. No difficulty was experienced in passing a catheter into the bladder; but as no urine flowed through it, percussion was performed over the hypogastric region, and the bladder found to be empty. Twelve hours later, ten fluidounces of a very dark-coloured liquid, which contained albumen, and under the microscope a large number of red blood corpuscles were passed naturally and without difficulty. The next evening jaundice supervened.

Feb. 27. The patient was transferred to the medical wards, and the following is from the notes taken at that time: "No urine has been passed since that above alluded to; percussion over the region of the bladder still gives a clear sound; the pulse is 82; the respirations

slightly more frequent than in health; the tongue is covered with a dry and brownish coating; the teeth are incrusted with sordes; tenderness in the region of the gall-bladder; no increase or diminution of hepatic dulness; tympanitic resonance over abdomen. Patient is excessively restless, and throws himself about in bed while answering questions; he answers questions intelligently; complains of excessive thirst."

The treatment adopted consisted in the administration of diuretics and anodynes. The next day a small quantity of urine (not more than f℥iij) was passed. This was found to contain albumen, but did not show the presence of biliary colouring matter when tested with nitric acid. A systolic murmur was heard at base of heart to left of sternum. The patient not having had a passage from his bowels since he left the surgical ward, was ordered an injection, which brought away a large quantity of feces, which were not light-coloured. On the first of March three more ounces of urine were passed; incontrollable vomiting and hiccough were added to the other symptoms. A few observations of the temperature of the surface showed that this was low: the thermometer in the axilla on two occasions indicating 95°, and on another 97° Fahr.

The symptoms above detailed, with the exception of the secretion of urine, which became quite free on March 4th, gradually increased in severity, the vomiting being unchecked by all the remedies employed. Diarrhœa also supervened, so that the nutritious enemata, with which an attempt was made to nourish the patient, were rejected. There was at no time somnolence or tendency to stupour. The patient sank from asthenia on the morning of March 7th.

The autopsy was made the next day, twenty-four hours after death. The body was emaciated and the skin jaundiced; the head not examined. Chest: Lungs somewhat engorged at their posterior and lower parts, but were otherwise healthy; no pleural adhesions or effusion. The heart was healthy, with the exception of slight thickening of the mitral valves. Abdomen: Liver enlarged, engorged with blood, and deeply stained with bile; gall-bladder filled with viscid bile; kidneys enlarged, of a pale-yellow colour, presenting the gross appearances of chronic tubular nephritis. A stricture of the urethra was found in its membranous portion, and an abscess in one of the lobes of the prostate gland.

The microscopic examination was made by Dr. J. G. RICHARDSON, who found the evidences of the first stage of tubular nephritis. The straight portions of many tubes were choked with granular matter, which prevented the descent of the urine.

Dr. PEPPER said this case suggested to him that of a soldier belonging to one of the regiments passing through the city during the late war. He had a stricture of the urethra, and on reaching this city was seized with retention of urine. A physician practised forcible catheterization on a Sunday afternoon. This was followed by vomiting and complete suppression of urine. The medical man kept him at his house during the night, and on the next morning brought him in his carriage to the Pennsylvania Hospital. In a very short time he became intensely jaundiced, with symptoms leading to the diagnosis of an abscess of the liver. He remained in this condition, apparently dying, for two weeks, when he began to expectorate a purulent matter, which did not respond to Pettenkoffer's test, though it was thought to come from an hepatic abscess, which had discharged through the lungs. He slowly gained strength, and insisted upon proceeding homewards, although still very ill.

REVIEWS.

ART. XVII.—*Studien aus dem Institute für experimentelle Pathologie in Wien aus dem Jahre*, 1869. Herausgegeben von S. STRICKER. Wien, 1870.

Studies at the Institute for Experimental Pathology at Vienna, for the year 1869. By S. STRICKER. Part I., with four wood-cuts and two lithographic tables. pp. 110. Vienna, 1870.

THE editor of this work, Dr. Stricker, is Professor of Experimental Pathology at the University of Vienna. He is the author of a late manual of histology,[1] the character and standing of which may be known from the fact that a translation of the first volume is announced by the New Sydenham Society as one of the volumes in the list of publications for the current year. He has attained to a high rank among the physiologists and microscopists of Germany, by his minute and conscientious researches, an account of many of which have been published in the proceedings of the Royal Academy of Sciences of Vienna. Among the most interesting and important of his observations are those on the minute structure of the capillaries (in which he shows that the red corpuscles often stick in the walls and thence escape—diapedesis—in contradistinction to the active wandering out of the colourless corpuscles), and also those on the development of the embryo in the eggs of the trout and batrachians.

The volume before us is a contribution to the study of the pathology of inflammation. In this subject the researches of Cohnheim, and his views as to the origin of pus-cells from the colourless corpuscles of the blood, have effected what Villemin's discovery of the inoculability of tubercle has done for the doctrine of tubercle—thrown the whole subject into a state of active fermentation, unsettled old views, given rise to new ones, and awakened a spirit of research which promises to yield us something definite and reliable upon this important subject. As an instance of the transition period in which we now are may be mentioned the fact that Mr. Simon, in the article "Inflammation," of the second edition of Holmes' *System of Surgery*, postpones all consideration of the pathology of the process, until the publication of the Appendix, because "all previous doctrines on the subject are just now in the very crisis of a consideration of which the morrow cannot be foreseen."

Although the title page bears the name of Dr. Stricker, he is the writer of but a few of the papers, the majority are from the pens of men working under his direction and supervision. His name, however, is guarantee of the reliability of the observations recorded, for, whether as author, teacher, or investigator, he stands second to none.

The following is a schedule of the contents of the volume under notice:—

[1] Handbuch der Lehre von den Geweben des Menschen und der Thiere. Leipzig, 1868.

On the present condition of the doctrine of inflammation. Introduction. S. Stricker.

Experiments upon inflammation of the cornea. Wm. F. Norris, and S. Stricker.

Upon cell division in inflamed tissues. S. Stricker.

On the relation of vessels and nerves to the inflammatory process. S. Stricker.

On traumatic encephalitis. Dr. Frederick Jolly, Munich.

Investigations upon furrowing (Furchung) and membrane formation of the hen's egg. Dr. Jos. Oellacher, Innspruch.

On endogenous formation of pus-corpuscles in the conjunctiva of the rabbit. Dr. L. Oser.

On the inflammatory changes of mucous fibres. Dr. Janovitsch Tschainski, St. Petersburg.

On tissue changes in the inflamed liver. Dr. A. von Hüttenbrenner.

On the conduct of the fixed cells of the tail of the tadpole after mechanical irritation. E. Klein and H. Kundrat.

Inflammation and suppuration. Résumé. S. Stricker.

It will be seen therefore that the work is not a complete treatise, and does not afford us an opportunity of presenting that entire view of the subject and those definite conclusions which we hope one day to record.

Yet the evidence it bears upon its pages of the patient and laborious efforts being made to overcome the difficulties of this most intricate subject, alone, makes it well worthy of our consideration, while the positive additions it makes to our knowledge are by no means insignificant. We will try to cull something from it for the interest and benefit of our readers.

Dr. Stricker very appropriately heads his introduction with a quotation in our language from Bennett: "Inflammation is so intimately interwoven with the theory and practice of medicine . . . . that in all ages it has been made the pivot upon which the medical philosophy of the time has revolved." This quotation indicates, too, what we find to be true, that the labours and the opinions of pathologists outside of Germany have not been overlooked, and are duly estimated. He then goes on to notice the close relation which has always held between the progress of microscopical investigation and the doctrine of inflammation, and that this relation has been especially marked in regard to increasing or changing knowledge as to the genesis and growth of cells. But as we have penetrated with improved instruments deeper into the tissues, our general idea of the complex process called "inflammation" has been weakened; to an idea drawn from the bedside and the autopsy has succeeded a definition of the minutest processes of the tissue elements. Of late there has been given to one of these minute processes an undue prominence, and it is taught that the essence of the process consists alone in the passage from the vessels of the colourless corpuscles of the blood.

"The new current of opinion has brought us only a doctrine of suppuration, and forced upon us the following alternative: We must either return to the old views, allowing the inflammatory process to have terminated with the action of the vessels, and cease to talk any more of an inflammation of non-vascular tissues, or we must not do this, but place the clinical idea—according to which suppuration is a consequence of inflammation—upside down, and derive inflammation from suppuration."

This leads him into some historical disquisition, not, however, of the subject in general, but in relation to some questions which are yet agitated and which must be taken into consideration whenever new investigations are undertaken.

The first point of interest which presents itself is another discoverer of the origin of the pus-corpuscle from the colourless blood-corpuscle. We say "another," because we so lately presented the fact that Waldenburg, in his history of the doctrine of tubercle, showed that Addison[1] long ago taught this origin. Now it is Waller[2] who, in 1846, published his observations and experiments upon the tongue of the frog, the illustrations of which are "so true to nature that we cannot doubt the accuracy of the observations." In a note, Dr. Stricker quotes the following paragraph from Waller, which we copy, together with his comment upon it, because this is a point of prime importance at the present time, and one upon which there exists wide difference of opinion.

"In some instances the manner in which the corpuscle escaped from the interior of the tube could be distinctly followed, that part of the tube in contact with the external side of the corpuscle gradually disappeared, and at nearly the same time might be seen the formation of a distinct line of demarcation between the inner segment of the corpuscle and the fluid part of the blood in contact with it.

After admitting that to Waller must be granted priority of discovery, he says :—

"But with a due estimate of the difficulty of a definite decision as to the perforation of the walls of vessels, I must maintain that neither Waller's illustrations nor his statements were such as to awaken confidence. I have only been able to diagnosticate a diapedesis, after I had been able, in the animal under the influence of woorara, to observe at leisure the clearly defined neck of such a corpuscle fast in the vessel-wall. So long as that has not been done it can always be objected that there may be two corpuscles, of which one adheres to the outside and the other to the inside of the wall. But such a neck Waller has neither described nor sketched. Neither can I find from his statement that he has really followed the entire act of perforation, although the passage quoted refers directly to it."

Waller therefore opposed the current doctrine of his day as to the origin of pus-cells in the blastema, but without avail, and his discovery attracted no attention. The labours of Goodsir and Redfern, however, soon effected what Waller could not, and Virchow's views have since been promulgated and arisen to the ascendant, until the year 1867, when Cohnheim again brought forward the doctrine of a derivation of the pus-cells directly from the blood, maintained this to be the characteristic feature of the inflammatory process, and by his advocacy won for it a general acceptance.

The history of experimental study of the injuries of the cornea is then sketched. To Bowman especially is given the credit of first laying stress upon the "disturbances of nutrition" following lesions of this membrane, the changes in the bloodvessels having alone been observed before. The doctrine of the origin of pus-corpuscles from the corneal cells was not changed even by Recklinghausen, who added, however, the discovery of the contractility and locomotor power of the pus-corpuscles. Soon after Cohnheim published his observations of the study of the inflammatory process in this membrane, together with his use of the chloride of gold as a means of rendering the elementary tissue forms visible. His statement, that the corneal cells do not participate in the formation of pus, but that the pus-corpuscle is here, as elsewhere, derived directly from the blood,

[1] See this Journal for January, p. 139.
[2] The reference is to the "Philosophical Magazine," vol. xxix. pp. 271, 398.

unsettled everything. Hoffman, a pupil of Recklinghausen, has entered the lists in favour of the former views, and has been replied to by Cohnheim, who denies most positively all participation of the corneal cell in the formation of pus, and thus matters stand at present.

In addition to, and entirely independent of, any questions as to the origin of pus, consideration must be taken of those processes which are a part of inflammation—the saturation of the parts with fluid exudation, and the disturbances of nutrition of the tissues.

Frankly stating that he has not gone deeply into the history of these points, the author refers to Bennett and Rokitansky as the chief advocates of the importance of the exudation. He quotes both; the former says: "It is only when the exudation has taken place that we can state positively our conviction of the presence of inflammation;" the latter, "with the exudation the inflammatory process must be looked upon as complete."

But the cell formations of such exudations were gradually thrown into the background, and the whole doctrine of exudation suffered the same fate, in bringing about which the discovery of the characteristic processes of inflammation in non-vascular tissues contributed not a little. Although the value of the process of exudation has never been entirely forgotten, we have gradually accustomed ourselves not to take the co-operation of the vessels into consideration when treating of inflammation.

"By the labours of Cohnheim, however, attention is again directed to the circulation, and indeed to such an extent that the disturbances of nutrition are once more placed in the background. In the place of fluid exudations, formed and living elements are introduced, but it is again a material originating from the blood, whose appearance is designated as the essential characteristic of the commencing inflammation."

One other point remains—the importance of the connective tissue[1] in the inflammatory process. This tissue, according to Virchow, is the source of all the new formations of inflammation. "From the stand-point of the theorists of inflammation the organism is only a structure of connective tissue into which nerves, muscles, and glands, entirely unessential to the new formations, are shoved." From time to time, however, advances have been made, showing this doctrine to be untenable. First came the discovery of Remak and Buhl that the epithelium is also in part a source of the neoplasm, and the probability that the gland cells participated was established. It is stated that Virchow himself, by his discovery that in inflammation the nuclei of the muscles increase in number, rendered important aid. Finally the author and Leidesdorf proved that the walls of capillary vessels grow and take part in the process, leaving but a single class of cells, the nerve cells, of which no account has been taken in inflammation.

"The recognition of the participation of gland cells, muscle nucleoli, and capillary vessels in the process of inflammatory formations has, in the meantime, scarcely diminished the great importance of the connective tissue. It is only a participation of these tissues which is vindicated in a process principally carried out by the corpuscles of the latter. Cohnheim alone speaks against this, and we can see, in his theory, a counterpart to the former doctrine of Virchow. Virchow attributed all to the corpuscles of the connective tissue; Cohnheim to the colourless corpuscles of the blood."

[1] "Every tissue is called connective tissue whose basis substance yields gelatine when boiled."—*Cellular Pathology*, translation by Chance, p. 47.

In view of all these differences of opinion, and of the amount of this profoundly intricate subject which is not yet known, the necessity for such "studies" as are here presented is apparent, and we assent to the necessity for that sober and temperate judgment upon these matters which, the author says, is beginning to prevail, as well as recognize how true it is that these "processes do not permit themselves to be constructed by the imagination." How some of them take place in reality is attempted to be shown in the various papers of the volume, and we do not know that we can do better for the benefit of our readers than to take some one of these papers and make a pretty thorough analysis of it as the best means both of giving an idea of the manner in which the investigations are carried on, and of furnishing a specimen of the results attained.

We select for this purpose the second paper, on cell-division in inflamed tissues, by Dr. Stricker. He remarks that the usual mode of investigating inflamed tissues under the microscope, by removing them entirely from the organism, is not likely to furnish proof of the vital changes taking place in cells, and he therefore rejects this mode entirely. Cohnheim's plan of studying the process in the parts yet in connection with the living being is far preferable, yet this author has limited his observations to certain occurrences in the finer vessels and in the colourless blood-corpuscles, and to the dogma that these occurrences comprise the essence of inflammation, Dr. Stricker has never given in his adhesion.

He chose for study the tongue of the frog rather than the mesentery, as a good field for observation of the corpuscles of the connective tissue, and chiefly, it would seem, because Cohnheim had failed to observe here any changes of form in these bodies. He learned from this to prepare himself for watching. We now give his own description of events:—

"Scarcely had I entered upon this study before my attention was fixed by peculiar occurrences in the nomadic cells. I directed my observations at first in the neighbourhood of small veins, in order to be able to follow at the same time the emigration of colourless blood-corpuscles, and then soon observed that single corpuscles after their emigration, and others, whose origin I had not observed, appeared to lie quite close to the vessels. Upon closer observation I perceived that on their surface dark lines, sometimes more, sometimes less clearly defined, made their appearance, then vanished and appeared again. Sometimes a corpuscle was bridged over by one line, sometimes by two, crossing at different angles. At the crossing point appeared a deep shadow representing a cavity. The lines shifted towards one or the other pole, and changed in direction and intensity."

Remembering what he had learned from the study of furrowing in the ova of the trout, and of the batrachiæ, he was convinced that he had here to do with the beginning of the process of cell division.

"Thus these two points, that an amœboid germ gathers itself into a cluster before the furrowing, and that segmentation is preceded by peculiar movements, gave me the hint that the colourless corpuscles gathered into clusters and lying near the vessels were preparing for the act of division, and that the appearance and disappearance of the dark lines gave expression to this preparation.

"In fact I soon succeeded in seeing so deep a grooving of one cell that it appeared to be divided into two clusters. The shadow line became a clear and distinct mark while also smaller groovings took place on the lateral circumference. It had the appearance now of two separated clusters lying near each other. Closer observation convinced me, however, that the clear mark was only a non-granular zone of the cell—a zone which certainly showed a small indentation or groove. The mark became broader, it appeared as if it separated

the granular clusters from each other, and then it became smaller again, and finally disappeared entirely; the clusters united once more, and there was no sign of the presence of a cell caught in the act of division, for it began again its amœboid movements and disappeared from the field.

"In another instance the mark remained, and also one of the apparently separated clusters tolerably unchanged, while the other began to move itself, gradually changed its location and dragged its motionless fellow after it; but the latter did not long remain passive, the whole mass flowed together again into one, and there was only an ordinary amœboid cell before me. Yet this condition did not remain long, the occurrences already described took place anew, shadow lines formed again, and after these had changed several times in intensity and direction, the clear mark appeared, which once more seemed to divide two large clusters in close proximity. But now the mark disappeared no more. For a time the clusters lay quiet, approached and moved from each other in a scarcely perceptible manner, until all at once one of them stretched out an arm, drew its body along after the projection, and the separation was completed. Soon the other cluster began to move, and the parted pair wandered in different directions over the field."

This process can be seen repeated with great frequency in the inflamed tongue of the frog and under favourable conditions. The time occupied by the process is, however, subject to great variation.

"Sometimes I watched one field for half an hour and more without seeing a single division, sometimes I have caught one within a minute or two. It is a matter of course that only a limited number of form-elements can be simultaneously controlled. It is well known that only one can be fixed upon at once, but since the probability of success increases with the number under observation, I selected generally three or four corpuscles which I inspected by turns, and delayed that one whose furrow was most advanced, and in which the probability of an actual division appeared the greatest. So long as it was a question of attaining a decided conviction, the single chosen corpuscle was not allowed to pass out of sight. The reader will comprehend this precaution when I say that so long as only single elements are in the field, the division is a seldom occurrence, and that it goes on best where the pus-corpuscles are thickest; where, so to speak, the forest cannot be seen for trees.

"It may happen that the majority of the pus-corpuscles do not wander about, and that many of them, by the changing furrows, indicate their preparation for division, and that thus there is favourable opportunity for the attainment of our object. The field of vision, however, swarms with nomads, which increases the difficulty of observation. If the eye is not directed uninterruptedly upon a certain form element, while the halves shape themselves for separation, the identity of the nomads with the former cluster cannot be maintained.

"To the more practised observer the prolonged fixation, even under the unfavourable circumstances mentioned, will not be difficult, and I may indicate the division of the pus-corpuscle as a process which is now easily followed. As a precautionary measure the inflammation should be allowed to advance before beginning the study, until large knots of pus-cells are easily met with, points should be chosen where the circulation is in rapid play and the view limited to the parts surrounding vessels, or, better still, fixed upon collections of pus-cells in the vascular angles. Farther, the animal should be but moderately affected by woorara, so that it will become active again after six or eight hours, and the tongue should not be stretched more than necessary to pursue the examination. By stretching and by too large a dose of the poison the circulation is weakened, and thereby also the intensity of the process of division. Finally, I advise the use of lenses of considerable focal distance (objective 7 of Hartnack) for the investigation, pencilling of the wounded part of the tongue with a weak solution of chloride of sodium (½ per. cent.), and the immersion of the lens.

"In what precedes, I have shown in what manner, and under what conditions, division of the nomadic cells takes place. I have sometimes used this

term [Wanderzellen], and sometimes again spoken of pus corpuscles [Eiterkörperchen], and it is a matter of course that in both cases I refer to equivalent bodies. I have, besides, pursued my observations in the neighbourhood of vessels thus in localities where, doubtless, there were many colourless blood-corpuscles. I have also observed the attempts at division in form elements whose emigration I had before directly observed. Whether all moving cells found in the neighbourhood of vessels are emigrants, or descendants of such, I will not now discuss.

"I conclude, firstly, with the one fact, *that in inflamed parts nomadic cells or pus corpuscles increase by division.*"

After consideration of some objections which may possibly be advanced against his observations or conclusions, he proceeds to the real object in view when he began this study—to follow the changes of the connective corpuscles of the intermuscular tissues of the tongue. From his experience, which we have already given, his confidence of success had not been increased. The difficulty of maintaining the circulation in lively flow through the parts, the fact that the division of cells goes on but very slowly in the neighbourhood of blood-stasis, and may even be sought for in vain, and the fact that the inflammation itself does not proceed with the usual rapidity in poisoned animals, rendered all precautions in the highest degree necessary. A portion of the tissue was selected for examination, and its vascular arrangement carefully sketched under low power, then under a higher power. Several of the bodies lying in the interspaces were also drawn, so that the same objects could be again brought into the field, and the study continued, in spite of interruptions or postponements. These corpuscles of the connective tissue are of two kinds, the one in shape like an irregular cluster, the other more extended or stretched out and exceedingly irregular. If he did not succeed in seeing the division of these bodies, he satisfactorily established the fact that they possess the power of motion.

"I have kept such bodies in view many hours in succession. I saw groovings appear and vanish. While the mother cell lay motionless, an appendage attached to it by a mere thread executed lively motions, flowed again into the former, and new furrowings took place without, however, proceeding to an actual separation."

"A more extended course of observations soon taught me that, also, the extended and peculiarly shaped bodies possess a manifold degree of movability. In one case I followed the observation ten hours in succession. In the course of this time the animal became restless, and a second dose of woorara had to be administered. I expected, in this case, a division. The corpuscle which I had kept in sight from the beginning showed itself more active than usual. Not only was the play of furrow-lines lively, but single parts also changed their form independently. First it was only one terminal projection which showed activity, then the two next, and now the appearance was peculiar. Although one part of the body exhibited no striking changes, yet it appeared as if the body, originally like an extended S, had rolled itself up like a skein. It was afterwards observed that it was only the three end members whose change of form and position occasioned this deception."

* * * * * * * * *

"It was decided that even the apparently stationary corpuscles of connective tissue in the course of the inflammatory process attain a certain degree of movability, that changes make their appearance which indicate attempts at division, and that, finally, parts of them become quite as movable as even amœboid cells."

"Embryology teaches that the immovable cells proceed from amœboid, and the inflammatory process shows us that the reverse may take place. I say *may* take place, because single observations do not justify us in drawing general

conclusions, and because it borders upon probability that cells which have once reached a certain age are no longer capable of moving in totality.

"Whether movable connective tissue corpuscles actually divide, and in a wider sense increase, is, by the preceding observations, again made probable, but not really proved."

By all these trials the conviction had been forced upon the author that only insufficiency of means had prevented the actual observation of the process of division of the so-called fixed connective tissue corpuscles. He had recourse again to the cornea as a more promising field for pursuit of his object, and we will interpolate here, from the first paper of the series, a paragraph or two upon the structure of this membrane, and his mode of studying its cell changes.

"When the cornea of a healthy frog is brought under the microscope in its own aqueous humour, and with the other well-known precautions, at a little distance from the cut edges no structure can be perceived, the cornea appears, where evenly spread out, entirely homogeneous, and the upper and lower borders of the preparation can only be distinguished by the foreign matter adhering to them. At the turning point of folds, the anterior or posterior epithelium, according to the position, can be seen separated from the proper corneal tissue, but the layers of the former appear only as homogeneous zones.

"Engelman has expressed this fact, by saying that he considers the preparation the more successful the less he can at first see. For us, in view of the succeeding communications, it is a sign of the normal condition." For—

"The homogeneous appearance of the cornea is destroyed by any interference. If a foreign body is thrust into its centre, or if it be cauterized with nitrate of silver, certain form-elements can be recognized immediately after the excision. When only fifteen minutes have elapsed between the application of the injury and the excision, the anterior epithelium and many inter- and sub-epithelial nomadic cells are perceptible, and when one or two hours intervene, a smaller or larger number, according to circumstances, of the peculiar corneal cells, make their appearance, and remain, so long as no other changes occur, as dark islands upon a clear ground."

As a means of maintaining cell changes under observation, and of enlivening them when they begin to grow languid, the following plan, original, we believe, with Dr. Stricker, is pursued:—

"After the cornea is excised and properly prepared for observation, we decapitate the frog, collect its blood, and allow it to coagulate. We then, from time to time, touch one edge of the covering glass with a little of the coagula. Along the opposite edge we lay a strip of filter paper, which, when saturated, is replaced by another. Thus blood is supplied to one side of the preparation and withdrawn from the other. Under this influence a transudation goes on which can be made continuous or interrupted at the will of the experimenter."

In this manner his observation of cell changes in the cornea was pursued:—

"The first sure observation of cell-division I made in one of the large movable plates lying on Descemet's membrane. The structure was so fine that I could not at first distinguish it unless by shading off the side light from my retina. I then soon observed that it changed its form; I began to draw the figure of it, and even before the sketch was done it had ceased to resemble the original, and so the change continued for twenty minutes; then a diagonal mark formed and upon each side of the mark a flat elliptical nucleus became distinctly visible. Gradually the body upon each side of the mark corded itself in and went so far that the two halves only hung together by a slender thread. Each half now changed form independently, the nuclei became again invisible, one half grew pale while the other remained visible. But yet the uniting cord was not divided; it grew thicker again and for a time it appeared as if the trace of

division had disappeared. Then the mark came again and again vanished, until finally, after perhaps an hour under continual transudation, the bridge of union was reduced to a small arm, the thread broke, its ends were drawn in and one of the corded-off but yet smooth halves left the field under active changes of form."

* * * "In this case the peculiar nuclei leave scarcely a doubt that we had to do with a large double nucleated epithelial cell. The division took place besides with such clearness that I am compelled from this observation to draw the conclusion that the epithelial cells of Descemet's membrane, under favourable conditions divide and change into nomadic cells."

Farther instances are then related of the observation of the same changes.

One question yet remains to be answered: "Can the direct transition of corneal cells into nomadic cells be observed in such a way?" This question he is not prepared to fully answer; he relates at length several observations going to show its possibility, and concludes the paper as follows:—

"From an extended range of attempts I have gained the conviction that a direct observation of the transition of a branched corpuscle into an amœboid is dependent upon accident or upon a very prolonged observation.

"It has now, to repeat once more, been also shown in the cornea that out of one nomadic cell two independent wandering elements may be formed. It has been further shown that a bi-nucleated cell, having no resemblance to a colourless blood-corpuscle, which from situation and form must be claimed as an epithelial cell of Descemet's membrane, can likewise divide into two nomadic cells; and finally it has been shown that larger many-nucleated and more inactive elements of the inflamed cornea can become, entirely or partially, as to appearance and movement, like unto the nomadic cells.

"After what has been demonstrated in the first paper as to the genesis of these larger elements, that becomes yet more probable, which was then left scarcely doubtful, that nomadic cells proceed from the branched so-called fixed corneal cells."

There are several other papers of the work deserving notice, the one on traumatic encephalitis especially, yet the fact that only by little less than a complete translation could justice be done to them, forbids us entering upon their examination. We turn, therefore, to the conclusion, which is not so complete a *résumé* of the subject as we had hoped to find, undoubtedly because of the fragmentary character of the work, made up as it is of studies of special points, and we must wait therefore for that complete account of the process of inflammation which we are satisfied no one is better able to give than the editor.

First as to the exit of the colourless corpuscles from the bloodvessels, we learn that

"It is a proved fact that, in the beginning of the inflammatory process, troops of these corpuscles leave the vessels and spread themselves abroad in the tissues. The question then, whether pus corpuscles originate from the blood, needs no more to be propounded. It must, however, be asked, From what *other* sources does pus originate? To this there have been various answers returned in the foregoing papers.

"It has above all been shown that the pus corpuscles themselves divide, and it has been shown to be probable that in profuse suppurations the most important mode and origin of the pus is to be found in the process of division. It has further been shown that the epithelia, partly by division and partly by endogenous growth, gives birth to a young generation. It has been shown that the corpuscles of the connective tissue, during the course of the inflammatory process, take on properties, after which the ability to divide can no longer be denied to them—even that, in consequence of these properties, they already

possess the character of pus corpuscles. It has, finally, been shown that the muscle corpuscles increase in number.

"We can thus lay down the following general proposition: *The pus corpuscles originate from various sources.*

"It has further been shown that, as a consequence of the inflammatory process, there may be an outgrowth of the capillary vessels, a transformation of the liver cells into fibres, and, finally, that under certain circumstances the nuclei of nerve-cells increase in number. All these processes indicate disturbances of nutrition, which must be explained as increased vital processes. For increase of substance, change of form, the appearance of new nuclei, are vital processes, and when they are formed where they were not present before, an aliquot part of the vital process must have been increased.

"We may also present the following proposition, which is of general application, because the occurrences have been observed in all types of cells: *The inflammatory process is accompanied by an increase of function of the cellular elements influenced by it.*"

While then we are driven towards Virchow's views as to the essential importance of the local disturbance of nutrition, it will not do to consider the term inflammation as defined by a statement of this part of the process. Neither will it do to consider it as merely an exit of colourless blood corpuscles from the vessels. A majority of the rising generation, we are told, do thus look upon it, and, to use an expressive German proverbial phrase, "throw the child out with the bath." A statement of both these processes will not cover the term inflammation.

"If we would hold fast to an independent clinical idea of acute inflammation, we must define it otherwise. Or rather we cannot define it, we must describe it according to the manner of Celsus. We must enumerate its characteristics in order to represent the clinical process, and among these a prominent position must be accorded to the 'disturbances of nutrition.'

"A not less important role must be accorded to the 'exudation.' . . . . The importance of the exudation stands again to-day, in the minds of physicians and experimenters, as high as at the time when it was so strenuously maintained by Bennet and Rokitansky. . . . It is an important, perhaps, with the nutritive disturbance the most important, characteristic of inflammation."

The following processes take place in inflammation experimentally produced, with the order of their occurrence:—

"Traumatic influence, disturbance of circulation, exudation of fluid and morphological constituents, disturbances of nutrition—new formation.

"Neither of these characteristics is alone decisive. An injury may be effected, disturbance of circulation may become perceptible to our eyes, without inflammation following, and without our being able, with our present means, to say that this disturbance of the circulation is really different from the inflammatory.

"That the exudation alone does not make inflammation is proved by œdema, and again we find ourselves without the means of recognizing the finer features which characterize the inflammatory exudation."

Small as this work may be in comparison with the importance and extent of the subject studied, and minute as the points settled may be, it belongs to a most valuable class of scientific publications, and by such workers as its authors is the hidden to be made plain and the unknown to become known. It is indicated as the first of a series, and we shall look with interest for those which are to follow. J. C. R.

ART. XVIII.—*Obstetric Operations, including the Treatment of Hemorrhage.* By ROBERT BARNES, M. D., F. R. C. P., etc. With Additions by BENJAMIN F. DAWSON, M. D., etc. 8vo. pp. 483. New York: D. Appleton & Co., 1870.

SINCE the death of the lamented Sir James Simpson, there is no writer on obstetrics who commands a position higher than that of Dr. Robert Barnes. No one can read his articles without profit, nor without being struck by the originality of thought and the fertility of resource which crop out on every page. Hitherto he has made himself known by short trenchant essays, and this volume will, therefore, be the more welcome to his admirers, of whom he has no small number in this country. Having recently read this work with an increased admiration for the genius of its author, we propose to give a short analysis of its scheme and scope.

The author begins without circumlocution or preface, to consider the emergencies in labour which demand assistance or interference, and the instruments requisite for this purpose. If the position of the child be unpropitious, the hand, the lever, and the forceps are the instruments. If disproportion be the cause of trouble, then the instruments must vary according to the kind and the degree of the disproportion.

As our readers may be interested to know what are the tools of this master-workman, we will enumerate the contents of his "obstetric bag," in the order he gives.

"To save the child.
1. A lever.
2. A pair of long double-curved forceps.
3. Roberton's apparatus for returning the prolapsed funis.

To reduce bulk of child.
4. A craniotome or perforator.
5. A crotchet.
6. A craniotomy forceps and Simpson's cephalotribe.
7. Ramsbotham's decapitating hook.

To induce or accelerate labour.
8. A blunt-ended straight bistoury, with a cutting edge of three-quarters of an inch to incise the os uteri, in cases of extreme contraction or cicatrization.
9. A syringe with flexible uterine tube nine inches long.
10. A set of my caoutchouc hydrostatic uterine dilators.
11. Three elastic male bougies (Nos. 8 or 9).
12. A porcupine-quill to rupture the membranes.
13. A flexible male-catheter.
14. A pair of scissors and thread.

For the Cæsarean section.
15. A bistoury.
16. Sutures, silk and silver.

17. Chloroform and inhaler.
18. Laudanum.
19. Hoffman's anodyne.
20. Ergot of rye.
21. Solution of perchloride of iron. An ounce of this diluted with six ounces of water is an efficient hæmostatic."

This "obstetric bag" certainly has the merit of completeness, but we fear our country brethren, who ride much across country, would demur at its weight. To this list are subjoined by the American editor, the obstetric cases of Professors Elliot, Thomas, and Budd, all of which seem to us to contain too many instruments. The numerous friends of Prof. Elliot will be pleased to learn from a foot-note, that he "is having constructed a

cephalotribe of an entirely new model, and is perfecting his *Perineal Protector*. He is also engaged in testing the value of Joulin's Aid Forceps." This would be quite an entertaining bit of gossip from "our own correspondent," but is hardly relevant to the dignity of the text.

The vectis is next discussed. Dr. B. claims that it is essentially a lever in its action, notwithstanding its sharp curve, and contends that "it does not directly draw down the head, but, by pressing upon one side or point of the head-globe, it causes the globe to revolve upon its centre, its axis representing another lever." A number of graphic wood-cuts illustrate this point of view, but we think they only show that the axis of the child's head represents a lever, whilst the vectis becomes the power applied to one extremity of it. Dease,[1] J. Hall Davis,[2] and Copeman,[3] assert that this instrument, miscalled *lever* or *vectis*, is a true tractor, and should only be used as such. Up to a certain point it appears to us that both these opinions are correct, and that its action is a compound one. For when in use a certain amount of lateral pressure against the child's head is unavoidable, in order to prevent slipping, and this pressure converts it into a lever of the "third kind," even when pure traction is aimed at. Dr. Barnes uses Symond's lever, which is provided with an honest wooden handle, and with a joint in the shank, enabling it to be folded up. We deem ourselves fortunate in possessing this instrument, and can recommend it highly in mento-and occipito-posterior positions, and in cases of imperfect flexion or extension. In this country the vectis has fallen into undeserved disuse, but this we partly attribute to the inefficiency of the American pattern, which is too short and too moderately curved, whilst the ambitious fenestra in the handle renders the hold very unsteady and painful.

It is gratifying to find that in Dr. B.'s "obstetric bag" the straight forceps finds no place; indeed, from a late discussion with Dr. Beatty in the *Medical Times and Gazette* for 1868, it is evident that he is not very partial to this instrument; and yet he has so far yielded to the prejudices of his countrymen as to devote the whole of Chap. IV. to a consideration of its application. It is a matter of surprise that the teachings of Denman, Osborne, and Blundell, elsewhere obsolete, should still influence the present generation of British practitioners; and that, since the days of Smellie, Pugh, Giffard, and Perfect, the use of the forceps has positively retrograded. To England is due the merit of the discovery of this noble instrument, and yet in that country are its benefits least appreciated. The only reasons we can assign for this anomaly are the delay in the application of the forceps, until the head is either low down or well jammed into the pelvis; and the custom of keeping the woman on her side, a position which interferes much with the accurate adjustment of the double-curved forceps to the sides of the child's head. As Dr. B. remarks, "one merit the short forceps has, not without importance to the novice; it is easier to use than the long forceps." Were the forceps applied earlier, and the dorsal decubitus adopted, we believe the short, straight forceps would become as great a curiosity in England as it is in this country.

In Chap. V. he considers the application of the long, or double-curved forceps, but, strange to say, neglects to inform the reader when and under

[1] Observations in Midwifery, 1783.
[2] Parturition and its Difficulties, pp. 74 and 339.
[3] Records of Obstetrical Consultation Practice, p. 59.

what circumstances to resort to its use. This omission appears to us the more important, since Dr. B. represents the progressive school, and all the hitherto standard British authors, with perhaps the exception of W. Tyler Smith, are unsound upon this very point. Before reviewing this chapter, it will be necessary to turn back a few pages, and see what Dr. B. considers a good forceps. "The best are Simpson's and Roberton's. The essential conditions to be contended for are that the blades have a *moderate* pelvic-curve; a head curve, also *moderate;* an extreme divergence between the fenestræ of *three* inches." (p. 19.) Again, he observes at page 32, "In the English patterns the points are generally distant from each other *an inch or more;*" whilst the narrow blades and the kite-like shape of the fenestræ—we all know—are religiously handed down from father to son. With these facts before us, we were not surprised at the admission on page 63, that, in estimating the descent of the head by that of the shanks, "allowance must be made for some slipping, which takes place with all the English instruments, whose blades have only a moderate curve." But it will be news to the reader, that this slipping is an advantage, and one of the main elements in securing a good grip. At page 31, we quote the following: "In order to draw, the instrument must take hold. How does it take hold? You may at sight suppose that this is accomplished by grasping the handles. But in the case of the ordinary forceps, especially the short-handled forceps, there is little or no compressive power, so that the hold cannot be due to the handles. The hold is really due to the curvature of the blades, which fit more or less accurately upon the globular head, and the *compression of the bows of the blades against the soft parts of the mother, supported by the bony ring of the pelvis.*" Although we do not deny that, in the simplest cases, this extraneous compression may be enough to deliver the head, yet this cannot occur without some degree of slipping, and no forceps can be considered good, which depends for its grip upon such help. When there is room enough to apply the forceps—and Dr. B. applies them always in the ilia, where there is most room and least nipping—surely the soft parts of the mother can exert no great pressure upon their bows, unless they are so weak, or faulty in construction, as to slip; when, of course, the separation of the blades, thereby induced, would continue until arrested by their coming into firm contact with the pelvic tissues. If Dr. B.'s theory be a correct one, a forceps without fenestræ should have the firmest grip; but after continued traction, what physician, who aims to have the parietal protuberances and other salient points on the child's head protrude through the fenestræ, has not observed the blades so buried in the soft tissues of the child, which bulge up around and through the fenestræ, that even the soft parts of the mother could barely impinge upon them. The firm grip of the Hodge or Davis forceps, so much used in this country, certainly does not depend upon any such outside help.

In the application of the long forceps Dr. B. gives the following rule:—

"The position of the head may be practically disregarded. The pelvic curve of the blades indicates that these must be adapted to the curve of the sacrum in order to reach the brim. They must, therefore, be passed as nearly as may be in the transverse diameter of the pelvis. One blade will be in each ilium, and the head, whatever its position in relation to the pelvic diameter, will be grasped between them. The universal force of this rule much simplifies and facilitates the use of the instrument. Not only does it apply to the position of the head in relation to the pelvic diameters, but also to all stages of progress

of the head, from that where it lies above the brim, down to its arrest at the outlet."

With diffidence we venture to question the soundness of this advice. Surely the aim of the physician should be to apply the blades over the sides of the child's head, whatever its position may be, for then they act to better advantage and do the least harm, both to mother and to infant. As Dr. B. himself remarks at page 242, in an argument supporting version in contracted pelves, "Compression of the head in its transverse diameter is much less injurious to the child than compression in its long diameter. The truth of this is attested or admitted by most authors who have considered this point." In neglected cases, or in those of dead children, where the head and shoulders are jammed down into the pelvis, it may not always be possible to rotate the blades into this position, but it should always be attempted, and will generally prove successful.

Dr. B. recommends the lateral position of the woman during the application of the forceps, and their traction. For convenience, as requiring no assistant, and for the reason that the patient is not so liable to become alarmed, we often apply the forceps in this position, but always experience far more difficulty in rotating the blades to the sides of the child's head; perhaps for this very reason Dr. B. applies them in the transverse diameter of the pelvis. In cases, however, of difficult application, or requiring powerful traction, the supine position is preferable, not only because the blades are more accurately adjusted, and the patient more under control; but because, by pushing the shank backwards and downwards, with the left hand upon the lock, a compound power is obtained, which forces the head away from the neck of the bladder or urethra, and compels it to hug the sacrum in its descent. Again, in occipito-posterior positions, by raising the handles with the right hand, and depressing the lock with the left, we can at once meet three important indications, viz., to lift the occiput off from the sacrum, to force flexion, and to make traction.

We are glad to see, on page 44, that the American editor inclines to the "pure tractive force of the forceps," in preference to the leverage movement of the handles, as recommended by Dr. B. This pendulum motion certainly adds to the ease of extraction, but is rarely necessary, and is liable to be abused by beginners, who thus bruise the maternal soft parts. Cases are on record in which the pelvic bones were separated and even fractured by exaggerated movements of this kind. Furthermore, did we believe with Dr. B., that the grip of the forceps is chiefly maintained by the pressure of the "soft parts of the mother supported by the bony ring of the pelvis," we should hardly dare to make any other than direct traction.

One paragraph on page 276 deserves quotation for its truthfulness, and also for showing how much in advance of his countrymen is the author. "Statistics, professing to show that the mortality from the use of the forceps is at the rate of one in twenty, are flagrant examples of the fallacy of arguing '*post hoc, ergo propter hoc.*' Properly speaking, the mortality from the forceps is *nil*. Women die because the instrument is used too late." We can truly say that we have never seen a death which could, by any possibility, be attributed to the use of the forceps; whereas, we are cognizant of several fatal cases which could be referred either to their non-employment or to the delay of their application. Our author, by the way, in common with the late Dr. Mütter, has a horror of "sta-

tistics." At page 246 he says: "I will not stop now to press the preliminary objection I entertain to submit the decision of this (viz., version in contracted pelvis) or any other question in obstetric practice to *a priori* arguments drawn from statistics." To him they are "a confused heap of incongruous facts" and "stultified by endless fallacies." Thanks for this boldness of utterance!

Chapter VII. discusses the subject of Occipito-posterior positions, but in a manner to which American physicians will certainly take exception. After recommending the use of the vectis in bringing down and rotating the occiput "under favourable circumstances," he adds:—

"But I cannot give more than a qualified assent to the propriety of attempting to rectify the position. It is only exceptionally useful; still more rarely is it necessary; and it is not free from danger. The head can be born very well preserving the occipito-posterior position throughout. Indeed, I think this occurs more frequently than Naegele represents. Nor does the case call for any amount of force. By aid of the forceps the delivery is nearly as easy as when this instrument is applied to an occipito-anterior position. In a large proportion of cases nature will not insist upon bringing the occiput forward; and here, again, your part is simply that of a minister of nature. The forehead will emerge under the pubes; the cranium will sweep the sacrum and perineum."

Prof. Hodge[1] states that in a practice of over forty years he has never failed to rotate the head anteriorly; and we have only once been foiled. Our own experience, with the forceps, in these positions, teaches us that, even after the occiput has rolled into the hollow of the sacrum, as it sometimes does, it will rotate anteriorly in the vast majority of cases, either spontaneously or by gentle coaxing; but that this rotation must not be looked for, nor attempted, until the head begins to press upon the floor of the pelvis, or even upon the perineum proper. We have repeatedly been obliged to hasten the removal of the blades, lest their pelvic curve should become reversed by the rapid rotation of the head, and have so been caught before they could be withdrawn. Nor is the delivery nearly as easy as in original occipito-anterior positions. Some of the most difficult forceps cases we have ever encountered, have been occipito-posterior positions in primiparæ. There is certainly additional and often serious delay in delivery with the forehead under the pubis; whilst the integrity of the perineum is always hazarded. For reasons previously given, it is especially important in these positions to have a forceps that will not slip, and to apply them to the sides of the child's head. Without wishing to be hypercritical, we are surprised that Dr. B. does not allude to the necessity of anæsthesia in these cases, for the patient is often rendered uncontrollable by the intolerable pain experienced in the sacral nerves during the descent of the hard occiput over them; and further, in delivery after the author's method, by the enormous distension of the acutely-sensitive structures of the vulva.

In this same chapter the author very ably, but rather too briefly, considers the subject of face presentations. In cases of mento-posterior positions, which cannot be rotated by the vectis, he advocates a plan first suggested, we believe, by Prof. Taylor, of New York, to make bilateral incisions of the perineum in order to facilitate the release of the chin. It is, however, doubtful whether in the majority of these cases, the head can be dragged down so low as to render this expedient available.

[1] American Journal of Medical Sciences, n. s. vol. lii. p. 451.

Chapter VIII. opens up the moot subject of the forceps in pelvic disproportion. He believes "the range of the forceps is not great, the head cannot be compressed by it quickly;" he limits their usefulness to a conjugate diameter not under three and one-half inches, and then advises "tentative experimental efforts with the forceps before *turning*, which is perhaps *more hazardous* to the child." Why does Dr. B. prefer version, a confessedly more dangerous operation, to the use of the forceps? Is it because he does not apply the forceps early enough; and then "grasps the head in the longitudinal diameter?" Is it because there is "an extreme divergence of three inches" between the blades of his forceps, and, therefore, the requisite degree of compression cannot be exerted? Or is it because "compression of the bows of the blades against the soft parts of the mother, supported by the bony ring of the pelvis," cannot take place to aid the grip of his forceps when applied at the brim. Few physicians in this country resort to version in a contracted brim because they know that when the vertex presents, moulding with the forceps may go on safely for a long time—even for one or two hours; but if the base come first the moulding must be effected within *five minutes* to save the child. As the head is usually transverse, the practice here is to place the forceps obliquely on the child's head, so as to diminish the bi-parietal diameter, and also so as to obviate any dangerous compression upon the medulla oblongata. One blade is therefore pushed backwards until its convex edge shall touch the promontory of the sacrum, whilst the other is rotated anteriorly until its concave edge shall approach the symphysis of the pubis. There is still another method taught by some of our best teachers, which we have found of great advantage, viz., to apply the blades to the sides of the child's head, and this can very generally be done if attempted early, and before the head becomes nipped between the promontory and pubis. Nor will the bladder or rectum sustain any injury, for the blades bury themselves in the scalp and flesh of the child, and actually lessen the danger of such positions by diminishing the bi-parietal diameter. In the transverse position with the occiput to the left ilium, the forceps may thus be applied at the brim by the following manœuvre: The right (female) blade is first introduced in the right side of the pelvis—the woman lying on her back—and by rapid depression and spiral twist of the handle, together with upward pressure on its convex edge, is rotated nearly half a circle over the forehead to the side of the child's head under the pubis. The left blade (male), held loosely in the right hand, with its handle hanging downwards, is now introduced in the right side also of the pelvis, under the shank of the other blade. Now by raising the handle, and gently pushing up this blade, it will slide up over the sacral side of the head. As flexion is always very imperfect in transverse positions, it is well to bring down the occiput by the hand, or vectis, before the handles are locked, and even then they forcibly press upon the left or right tuberosity of the ischium, as the case may be.

It has been objected that, in the normal pelvis, the axis of the superior strait strikes a point a little above the extremity of the coccyx; that the long forceps, applied in the conjugate diameter, virtually becomes a straight one, so far as its relations to the pelvis are concerned; and that, therefore, it cannot be applied to the sides of the child's head in transverse cranial positions at the brim. To this we reply that Dr. Kidd's cephalotribe, so much vaunted in England, has straight handles and blades; that Dr.

Beatty[1] and other advocates of the straight forceps apply them at the brim, and that Dr. Barnes himself (page 185) states a case in which he applied the straight forceps to a head, which "could not bear upon the cervix to dilate it, because of slight conjugate contraction." Again, in cases requiring the application of the forceps at the brim, the conjugate diameter is diminished usually, either by a sliding forward of the fourth or fifth lumbar vertebra (spondylisthesis); or by a projecting promontory, involving a scooped-out and shortened sacrum. In both cases the axis of the superior strait will strike a point in the perineum anterior to the coccyx.

In this connection it may be remarked that (page 22) Dr. B. assigns to "pelvic unfitness" the impossibility of locking the forceps handles, "which is prevented by the projecting promontory, or other deformity, so distorting the pelvic diameters that the two blades cannot find room to lie in the same diameter opposite each other," and advises, when this happens, to give up the forceps, and resort to version or craniotomy. Now, as he resorts to version, and never to the forceps, when the conjugate diameter is less than three and one-half inches, it follows that in these cases of so-called "pelvic unfitness," this diameter must either equal or exceed this length; for Dr. B. is too clever a practitioner to make mistakes about the dimensions of the pelvis, and to be caught attempting to apply the forceps in diameters less than the above. Why should a conjugate diameter of three and a half, or even three inches, interfere with the application of a good instrument? There certainly will be room for the thin blades. To us it seems far easier to apply the forceps, where the conjugate diameter measures three inches, than to apply the cephalotribe in a pelvis measuring only one and a half inches, as Dr. B. successfully did (page 268); for there is relatively less room in the one than in the other case. Is it not more reasonable to attribute this difficulty in locking to the narrow and kite-like form of the English fenestræ which do not admit the inequalities of the child's head? hence the convex edge of the one blade, and the concave edge of the other tilt up, by riding upon opposite parietal or other protuberances.

Before quitting this subject we wish to call attention to a possible danger in forceps cases in contracted pelvis. After the head has passed the brim—which it usually does with a jerk—there is generally no further obstacle to its descent; yet sometimes the shoulders become arrested, and if this fact be forgotten, and the previous degree of traction be continued, the child's neck may be broken.

Chapter IX. treats of dystocia, from faulty conditions of the soft parts, in which the author relies on patience, opium, irrigation, his dilating bags, and multiple incisions in the circumference of the os. We are glad to see he puts no faith in belladonna, and objects to tartar emetic, on account of its adding to the distress of the patient. In these complications his dilating bags deservedly take rank; but he barely alludes to the fact that even when skilfully applied, they are liable to the serious objection of converting a normal into an abnormal presentation; although his recent discussion with Prof. Playfair upon this very point must have been fresh in his memory. In rigid perineum he advises lateral incisions; we think the cautious use of the forceps still better; for often, thus, the head will be delivered without the anticipated laceration; whilst if any should occur,

[1] Medical Times and Gazette, 1868.

Killian[1] and I. Baker Brown have shown us that the immediate introduction of metallic sutures will cause it to heal up as readily as an incision.

The ten following chapters, illustrated by wood-cuts of a high order, are devoted to every kind of "turning." This operation he defines "as including all those proceedings by which the position of the child is changed, in order to produce one more favourable to delivery." We challenge any one to read these and the following chapters without doing homage to the genius of their author. They form a mine of wealth out of which we can give only a few nuggets. He clearly shows that spontaneous version can only take place while the child is alive, or so recently dead that the elasticity of the spine is preserved, whilst the condition of spontaneous evolution is the death of the child, which permits the mashing and doubling up of the body. Bipolar and cephalic versions are next treated of in a masterly manner. While engaged on this review we successfully put into practice his method in descent of the hand by the side of the head. "While the parts are still movable push up the presenting hand by means of your left fingers in the vagina, and at the same time by pressing down the head by the external hand towards the brim, you make the head fill the space until the double-curved forceps is applied." In arrested breech presentations he prefers to "decompose the wedge" by bringing down a foot, rather than by resorting to the blunt-hook or fillet. His observations on extraction of the arms and head after version, and after breech-first labours are admirable, but are too long to be quoted, and require the accompanying illustrations. In version after the escape of the waters, he recommends the *farthest* knee to be seized, for "you want the shoulder to run up while you draw down the leg," and "by drawing upon the opposite knee to the presenting shoulder the movements run parallel in opposite directions, like the two ends of a rope round a pulley." In incomplete version when the shoulder does not rise out of the pelvis, he "pushes the shoulder and adjacent part of the chest well forward and upward." All these manœuvres are illustrated by excellent figures drawn by his own hand. He barely alludes to the postural method of version, and omits another often found successful when the uterus has become rigidly moulded on all the fœtal prominences, viz., to bring down the other arm and by pulling on it, to compel the body to roll on its axis, and thus carry up the presenting shoulder; the hand is now passed up between the arms over the child's breast and a foot seized while the uterus is as it were thrown off guard.

Chapter XXII. takes note of craniotomy, which he limits to pelvic contraction ranging from 3.25″ as a maximum, to 1.5″ as a minimum. As usual in all Dr. B.'s operations, the woman preserves the lateral decubitus. In difficult delivery after perforation, he recommends version, as the bones will collapse better, and during extraction the scalp will be drawn over their jagged edges. In this chapter the author gives a "new method of embryotomy" which he thinks will do away with the Cæsarean section. After perforating, a loop of strong steel wire is passed over the occiput, and made to cut through it by an écraseur. This divided occipital segment is now to be removed and the loop to be passed over the chin and jaw, and the process to be repeated.

Chapter XXIII. exhausts the subject of the Cæsarean section.

Chapter XXIV. takes up the subject of induction of premature labour, and deserves the careful perusal of every physician, especially as our own

[1] Die Operat. Geburtshulfe, vol. i. p. 168.

text-books barely touch upon this important subject. To bring on labour, the author passes up an elastic bougie six or seven inches into the uterus, and coils up the remainder of the instrument into the vagina to keep it *in situ*. Next morning some uterine action will have set in. In the afternoon rupture the membranes and insert a dilator. The American editor has made this chapter exhaustive by appending a long extract from a valuable paper by Prof. T. G. Thomas, which first appeared in the *New York Medical Journal*, February, 1870.

The four following chapters treat of every variety of uterine hemorrhage, and of their causes. As the profession has long been familiar with the peculiar views of Dr. B. upon this subject, we shall note only the salient points. In the hemorrhage of abortion, he tries to remove the ovum with his fingers, and, if unsuccessful, breaks it up. To stop the hemorrhage he plugs up the os uteri, and *not the vagina*, by strips of linen or by laminaria tents. After the cervix has become dilated by these means, the uterus is emptied of its contents, and any subsequent hemorrhage treated by swabbing the cavity with a solution of perchloride of iron. His views about the nature of placenta prævia are so well known, we will simply give the treatment. If the hemorrhage be alarming, whether the patient be in labour or not, he punctures the membranes, applies a firm binder, and plugs up the os uteri with laminaria tents. If the hemorrhage continue after their withdrawal, and the os do not expand—for the adherent placenta acts as a mechanical impediment—he separates all the placenta within reach of the finger. Should the uterus remain inert, dilate the cervix still more with the water-bags, and deliver by version. With an experience of sixty-nine cases of this kind of hemorrhage, the writer is entitled to speak authoritatively, and we are glad to find that, contrary to the accepted opinion, he lays down as a rule that the os is dense and dilates with difficulty. The most rigid and unyielding cervix we ever felt was in a case of placenta prævia. To this paper Dr. Dawson has judiciously added copious extracts from a valuable paper by Prof. Thomas, on premature delivery in placenta prævia, first published in the *American Journal of Obstetrics*, No. 1, 1868.

Accidental hemorrhage, both "frank" and "concealed," are next briefly treated. The author punctures the membrane, dilates the cervix with his water-bags, and delivers by forceps or by bipolar version. The American editor has here introduced a long extract from an essay on concealed accidental hemorrhage of the gravid womb, by Dr. W. Goodell, which appeared in the *American Journal of Obstetrics*, August, 1869. Postpartum hemorrhage is discussed at length in two successive chapters. We advise our readers to peruse them carefully; although the only strictly original plan of treatment is the use of uterine injections of the perchloride of iron, in the proportion of four ounces of the strong officinal solution to twelve of water. There is one rule laid down in the diagnosis of adherent placenta which we deem too exclusive. The author says: "If you can feel the insertion of the cord without passing your hand into the uterus, you know that the placenta is cast." That this is not always the case, when the lower margin of the placenta is adherent, we have verified on several occasions.

The various methods and instruments of transfusion are next given, with which our readers are all familiar. We know of no instrument superior to that devised by Dr. J. G. Allen, of Philadelphia. Blood, defibrinated by whipping, and kept warm by a water-bath, is slowly injected by

means of a syringe, terminating in a nozzle so fine, that it is inserted directly into a vein, without any preliminary incision or painful dissection. By this method several cases of successful transfusion are reported in this city, not only in hemorrhage, but also in dangerous spanæmia.

Chapter XXIX. is an appendix which brings this work to a close. It treats briefly of twin labours, dorsal displacement of the arm, and the delivery of monsters. We will only quote the following rule for all cases of twin-labour: "As soon as the first child is born, apply a binder firmly on the abdomen to support the uterus, to aid it in recovering energy to complete the delivery, and to lessen the risk of hemorrhage"—which is always greater after such labours. The doctor, by the way, is so firm a believer in the advantages accruing from "the binder," that we fear he will lose caste among our enterprising brethren in Montgomery County.

In this critical analysis of Dr. Barnes' book, we have had the hardihood to differ with its gifted author on many points; and yet, after all, "there are," says the proverb, "many ways of getting to Rome," and his may prove the best. Viewed in the light of lectures, in which form most of them first appeared in the *London Medical Times and Gazette* of 1868–69, the style lacks the polished flow of the lamented William Brinton, and the colloquial informality of Sir Henry Thompson. But the originality of thought, and compactness of language, the freshness and raciness of the wood-cuts, will ever render this work an attractive one for reference; indeed, in our opinion, a more valuable contribution to the art of obstetrics has not issued from the press. The American publishers have spared no pains in the typography and general appearance of the work, whilst Dr. Dawson has, with judgment, refrained as much as possible from intercalating the text; and, if the author does not thank him for the few brackets he has ventured to introduce, we are pretty sure the reader will.

W. G.

ART. XIX.—*Surgical Memoirs of the War of the Rebellion, collected and published by the United States Sanitary Commission.* I. *On the Wounds of Bloodvessels, Traumatic Hemorrhage, Traumatic Aneurism, and Traumatic Gangrene.* II. *On the Secondary Traumatic Lesions of Bone: namely, Osteo-myelitis, Periostitis, Ostitis, Osteoporosis, Caries, and Necrosis.* III. *On Pyæmia.* By JOHN A. LIDELL, A.M., M.D., etc. etc., edited by Prof. FRANK HASTINGS HAMILTON. New York: Published for the United States Sanitary Commission, by Hurd & Houghton, 1870. 8vo. pp. xl., 586 (with wood-cuts and ten coloured plates).

THOUGH Professor Hamilton's name appears upon the title page of this volume as editor, all that he has contributed, so far as a careful perusal has revealed, consists of a short "Editor's preface," and a foot-note to page 163. The latter gives an interesting account of a case which Prof. Hamilton rather oddly calls a gunshot wound of the heart, though he expressly asserts that the ball did not touch the heart at the time of injury, but lodged near the right subclavian artery "near the inner edge of the anterior scalenus. From thence it made its way by absorption, gradually, into the right subclavian artery . . . . and from this point it slowly travelled, by pressure and absorption, into the internal jugular vein." The time occupied by the ball in reaching the heart is supposed to have been

not less than five years. We fail to see why this should be called a gunshot wound of the heart, any more than the curious cases where balls entering different parts of the body have been passed by stool, should be classed together as gunshot wounds of the anus.

A statement in the *Editor's* preface that this volume embraces "all the more recent observations upon the topics discussed," is adapted to excite surprise, particularly as on the next page we find an honest confession from the *author* that his work has been revised merely down to the fall of 1867. Surely Prof. Hamilton does not wish us to believe that, because the Sanitary Commission has been inactive for the last three years, science has been equally torpid!

Leaving now the editor's part of the work, we are prepared to consider this handsome volume as the production of Dr. Lidell, who is well known to our readers, from various contributions to this Journal, as one of the most prolific as well as one of the most able writers who have illustrated the surgical history of the late "War of the Rebellion."

Dr. Lidell's first monograph or first section is "On the wounds of blood-vessels, traumatic hemorrhage, traumatic aneurism, and traumatic gangrene." It is divided into thirteen chapters, which are respectively devoted to—1. Traumatic hemorrhage. 2. General considerations touching primary hemorrhage from gunshot wounds, or battle-field hemorrhage. 3. The wounds of arteries, (1) punctured, (2) contused, (3) lacerated, (4) gunshot, and (5) incised. 4. Traumatic aneurism. 5. Wounds of the veins. 6. Arterio-venous aneurism. 7. Wounds of the heart. 8. The spontaneous arrest of hemorrhage from wounded arteries, and the means by which it is effected. 9. Intermediary hemorrhage. 10. Secondary hemorrhage. 11. The surgical treatment of traumatic and especially of secondary hemorrhage. 12. Parenchymatous hemorrhage; and 13. Consecutive gangrene, or mortification resulting from the injury of blood-vessels.

Upon all of these subjects our author's remarks are interesting and generally judicious. His views coincide on most points with those of the leading authorities of the present day, with whose works he is evidently familiar, and of which, as well as of the writings of the military surgeons of the early part of the century, he has ably availed himself in the construction of his own work. He has besides given a *clinical* aspect to his pages by the introduction of numerous cases, many of which are original, and all of which serve an excellent purpose in illustrating and enforcing the precepts laid down in the text. Perhaps the most interesting part of this section is that which treats of *Parenchymatous hemorrhage*, a subject which, as Dr. Lidell justly observes, has not received as much attention as it deserves, at least in the text-books of our own language, though he is mistaken in supposing that it did not attract the attention of the older military surgeons, for it is distinctly if briefly described by Dr. John Thomson, in his "Report of observations made in the British Military Hospitals in Belgium, etc." (Edinburgh, 1816), who says that it usually occurs from the 20th to the 35th day, and who believes it to have been referred to in a passage which he quotes from Le Dran. The credit, however, of pointing out the connection between the occurrence of this form of hemorrhage and of thrombosis in pyæmic cases, is probably due, as remarked by our author, to the distinguished surgeon-in-chief of the Schleswig-Holstein Army, Dr. Louis Stromeyer, whose observations on this subject were published in 1850. By the term *parenchymatous hemorrhage*, which is borrowed from Stromeyer, is meant that troublesome form

of capillary oozing which the French call bleeding "*en nappe.*" When occurring as a form of *primary* or of *intermediary* (consecutive) hemorrhage, it is due to the dilatation of the capillary vessels which results from the inflammatory process, and which prevents them from contracting when divided, or allows them to yield when the force of the circulation is increased in reaction from the shock of an operation, the blood being at the same time forced by the artificial occlusion of the principal arteries into the smaller vessels which maintain the collateral circulation. When it occurs as a form of *secondary* hemorrhage, this parenchymatous bleeding is probably chiefly due to venous obstruction from thrombosis; it is under these circumstances frequently met with as a concomitant of pyæmia. We believe, however, that in these cases there is an additional cause of hemorrhage in a positive loss of coagulability on the part of the blood itself; a condition which obtains in pyæmia, as well as in many other forms of blood poisoning.[1] The treatment recommended by Dr. Lidell for *primary* and *intermediary parenchymatous hemorrhage* consists in the application of lint saturated with the persulphate or perchloride of iron; or, if these styptics cannot be obtained, the use of a sponge dipped in water of a temperature not less than 160° Fahr., or of the actual cautery. In cases of *secondary parenchymatous bleeding* from thrombosis, styptics and pressure may be tried; and if these fail, amputation at a higher point or ligation of the main artery. Even if the hemorrhage be checked by these methods, death will usually still occur as a result of the pyæmic condition.

While we entirely agree with most of our author's precepts as to the treatment of traumatic hemorrhage (these precepts being, indeed, as has been already observed, usually consonant with the teachings of the best modern authorities), there is one point upon which we cannot but think he is in error, if, indeed, his remarks upon the subject are not the result of some strange oversight in arranging his materials: this is in recommending, as he certainly appears to do, operative interference in cases of *primary* hemorrhage even when the bleeding has spontaneously ceased. Guthrie, indeed, went to the other extreme, and forbade operation under such circumstances, even in cases of *secondary* hemorrhage: this, however, is not the teaching nor the practice of the present day. As Erichsen well puts it, "In secondary hemorrhage . . . . the surgeon *may* proceed to adopt effectual means for the prevention of the recurrence of the bleeding after the first outbreak, even though all flow of blood have ceased when he sees the patient; and he *must* do so, and that without delay, if the hemorrhage have recurred more than once." But in a case of *primary* hemorrhage (unless the wounded vessel be exposed, when it should of course be secured), we conceive it to be the surgeon's duty *not* to resort to operative measures if the bleeding have spontaneously ceased. This rule is so well established and is founded upon such obvious reasons, that it will, we think, require much more than the one case detailed by Dr. Lidell, to erase it from its position as an accepted surgical *dictum.* Indeed we find, upon referring to our author's excellent paper in the number of this Journal for January, 1864 (from which Chapter IV. of the present work is mainly copied), that he there insists in forcible terms upon the propriety of this very rule, and declares that to ligate an artery "in such a case would be to

[1] The liability to capillary hemorrhage appears to be particularly marked in those cases where the proportion of white or colourless blood corpuscles is increased; just as in the disease which Virchow calls "Leukæmia," and Bennett "Leucocythæmia."

inflict unnecessary torture upon the sufferer." Seeing that in 1864 Dr. Lidell was so clear upon this point, we are at a loss to understand why he should now have abandoned his former position, apparently upon the strength of merely one case, which occurred in 1861, and which is after all of but negative importance, for there is no proof that the patient would not have equally well recovered without the operation.

Another point on which we cannot agree with Dr. Lidell is in his recommendation of the *lateral* ligature in cases of wound of large veins: Gross's[1] researches, to which our author refers on the very page on which he gives the above advice, show clearly, we think, that secondary hemorrhage is much more likely to follow the use of the lateral than of the ordinary double ligature.

With these exceptions, Dr. Lidell's observations on the treatment of traumatic hemorrhage seem to us to be both founded in reason and justified by experience. The reader may be a little surprised to find the important subject of *Torsion* (which appears to be the topic in connection with the arrest of hemorrhage, which just now occupies the first place in the mind of the coming surgeon) summarily dismissed in five and a half lines. Even before the late revival of the practice at the hands of British surgeons, which it may be argued has been since Dr. Lidell's date, torsion was a matter of sufficient importance to demand more space than this in a work which professes to give of wounds of bloodvessels "a more systematic, thorough, and complete account than any before presented," and which the editor assures us constitutes a "complete and exhaustive" treatise upon the topics discussed. *Acupressure* fares no better at the hands of our author, being likewise dismissed in less than six lines: the fact that Dr. Lidell "has no experience in the employment of this procedure," surely does not warrant its being thus ignored in any account of the treatment of traumatic hemorrhage, even if not claiming to be so "systematic, thorough, and complete" as that before us.

"The metallic ligature or suture," says Dr. Lidell, "generally appears to be preferable to the silken or linen article, because of its non-absorbent properties. Thus it is not liable to become soaked with decomposing discharges; and thus it produces less irritation of the surrounding parts than the other kinds of ligature." No references are given to cases in which Dr. Lidell has employed the metallic ligature for restraining hemorrhage, and we are, therefore, somewhat at a loss to know upon what *practical* (not *theoretical*) grounds our author bases his preference for a mode of treatment which, we confess, seems to us eminently ill adapted for military practice.

To Dr. Lidell's *second section*, which discourses of the secondary traumatic lesions of bone, we turn with special interest, because the author's name is prominently associated with the subject of osteo-myelitis, and because we have a pleasant recollection of an able paper from his pen "on contusion and contused wounds of bone," which appeared in the number of this Journal for July, 1865. This section embraces five chapters, which are devoted to, 1. Osteo-myelitis; 2. Periostitis; 3. Ostitis; 4. Caries; and 5. Necrosis. *Osteo-porosis* (a porous condition of bone, resulting from inflammatory action) is discussed in connection with osteo-myelitis, ostitis, and caries, respectively. To this section belong likewise the ten coloured plates, which, we may say at once, are the most beautiful illustrations of

[1] See number of this Journal for April, 1867, p. 319.

osteo-myelitis which we have ever seen. They are all drawn from nature by Köhler, and executed in the best style of chromo-lithography, at the well-known establishment of Bowen & Co., of this city. *Osteo-myelitis* is defined by Dr. Lidell as "inflammation of the medullary tissue of bone." It is, as he very justly observes, not a new disease, though it has not until recently received as much attention as it deserves, at least in our own country. Even now a considerable number of surgical writers do not recognize the disease except in its most destructive forms—the suppurative and gangrenous—and hence has arisen a confusion of terms, which (as we have pointed out in our edition of Erichsen's *Science and Art of Surgery*) has occasionally led to most deplorable errors in treatment. This chapter we consider by far the best portion of Dr. Lidell's whole book, and we should be glad if it could be not only read, but studied by all practising surgeons. After a brief bibliographical *résumé*, which does not claim to be exhaustive, our author gives a short sketch of the physiological anatomy of the marrow, taken chiefly from Robin, through the medium of the quarterly summary of this Journal for October, 1865 (pp. 498–503). Our author's division of osteo-myelitis into the acute and chronic varieties does not seem to us a very good one (and, indeed, he himself confesses that it is not satisfactory); a more scientific classification would be one founded upon the morbid anatomy of the disease in the different stages of the inflammatory process, whether going so far merely as simple cell proliferation or lymph production, or running on to suppuration of the medullary tissue, or still further to gangrene. Thus we might speak clinically of simple, of suppurative, and of gangrenous osteo-myelitis, the former (which, as we have seen, many surgeons ignore altogether) being the variety which is met with in the union of fractures by what the older writers described as *internal callus*, and which is a very frequent, if not constant accompaniment of ostitis, and an occasional one of inflammation of the periosteum.

Dr. Lidell very properly insists upon the distinction between osteo-myelitis and pyæmia, a distinction which, as we have shown elsewhere, was strangely ignored in the "Astley Cooper Prize Essay" of Dr. Braidwood. Osteo-myelitis is a very frequent antecedent and cause of pyæmia, and probably never its consequence; at the same time it is quite possible that *puriform* deposits (so called "metastatic abscesses") may occasionally be found, in pyæmic cases, in the medullary, as well as in other tissues of the body.

The causes, symptoms, pathological appearances, means of diagnosis and prognosis, and modes of treatment of osteo-myelitis, are well described by our author, and this chapter constitutes, upon the whole, we think, the best systematic account of the affection which has yet appeared in our language. With regard to the local treatment of osteo-myelitis, Dr. Lidell very properly lays stress upon the importance of free incisions, and recommends trephining in certain cases of the disease, especially of the suppurative variety, and when confined to a limited portion of the bone. We believe that even in the non-suppurative forms of osteo-myelitis advantage may be derived from the plan recommended by Erichsen in cases of ostitis, viz., making a longitudinal section through the compact tissue by means of a Hey's saw. The operation is less severe than that of trephining, while the relief from tension is equally well attained. If, however, medullary suppuration have actually occurred, it would probably be better to remove a portion of the compact wall of the affected bone, either with the

saw or trephine, as was done with the most gratifying results in 1798, by the late Dr. Nathan Smith.[1]

Amputation or *disarticulation* are often required in cases of acute suppurative or gangrenous osteo-myelitis, and have been occasionally successful even when performed after the onset of pyæmic symptoms. When the medullary inflammation runs a less rapid course, amputation should not, we think, be usually performed, unless the disease has invaded the epiphyses, involving the neighbouring joints (pyarthrosis). Under the latter circumstances, removal of the affected limb may be practised with the best results, as in a case in which we amputated at the shoulder-joint for osteo-myelitis of the humerus, with pyarthrosis of shoulder and elbow, the result of a fall upon the ice.

An interesting case is cited by Dr. Lidell from the practice of Prof. Van Buren, in which osteomyelitis of the tibia was followed by spontaneous separation of the upper epiphysis: this case, our author believes to be the only one of the kind on record, with the exception of thirteen described by Klose, of Breslau, and two described by Gosselin. We ourselves several years ago, reported such a case, in which the part affected was the upper epiphysis of the humerus, although we confess that we did not appreciate the significance of the phenomenon at that time (see No. of this Journal for April, 1862, p. 414): we may add that Mr. Holmes refers to a specimen in St. Bartholomew's Hospital Museum, which shows "the head of the femur which had separated in the course of an attack of acute pyæmia, and was found lying loose in the cavity of an abscess which had formed in the joint."[2]

Chapters II. and III. of this section treat respectively of periostitis and ostitis, but present no features calling for special comment. In Chapter IV., Dr. Lidell takes up the consideration of caries, which he defines simply as "ulceration of the osseous tissue." This is, we think, upon the whole, the most philosophical, as it is certainly the most comprehensible definition of the term, but, to be consistent, we must adopt the converse proposition, and say that ulceration of bone is caries. This statement Dr. Lidell apparently does not agree to, at least he seems to recognize in a foot-note another form of osseous ulceration; as being "required to effect the separation of necrosed fragments." The fact is, however, that though we may have necrosis with caries (just as we may have gangrene with ulceration), the natural separation of necrosed portions of bone is in the large majority of instances effected, like that of gangrenous soft parts, *not* by ulceration but by granulation; the removal of a sequestrum, as every one knows, does not leave a *carious* cavity, but a granulating surface due to the rapid proliferation of living bone tissue, a process to which Ollier gives the expressive name of medullization. Dr. Lidell's remarks upon caries, though brief, are interesting and judicious: it may cause surprise, however, that, under the head of treatment, no mention is made of the use of the *Liqueur de Villate*, so highly commended by M. Notta, or of the seton, an application praised by Bromfield, and recently brought prominently before the profession by Prof. Sayre, of Bellevue Hospital.

Chapter V., "Of Necrosis," demands particular attention, because in it Dr. Lidell describes a disease of bone which he calls "Mephitic or wet gangrene," which he considers to have been hitherto unnoticed, and of which he says in the preface, "It is believed that this subject is quite new." We quote our author's account of this affection in his own words.

[1] Medical and Surgical Memoirs, p. 109.
[2] Surgical Treatment of Children's Diseases, p. 423.

"The contrast in appearance between that presented by a piece of bone involved in necrosis [which Dr. Lidell defines as dry gangrene of bone] and another piece of bone involved in mephitic gangrene is very strongly marked. The difference in appearance is even more striking than that which obtains between the wet and the dry gangrene of the soft parts. *Necrosed bone is dry, hard, white or yellowish-white in colour, insensible, sonorous when struck, and comparatively inodorous. But osseous tissue invaded by mephitic gangrene is moist, more or less softened in consistence, not unfrequently the softening is considerable, dirty gray, dirty pale-green, or dirty greenish-brown in colour, and it exhales the intolerably offensive odour of rotting bone.* Necrosed bone bears a strong resemblance to the bleached osseous tissue of the skeleton in appearance. Gangrenous bone (mephitic) does not present any such resemblance. We will take this opportunity to remark further, concerning mephitic gangrene of bone, that it is not unfrequently met with in military practice in connection with traumatic lesions of the osseous tissue. I have seen it occur in a case of gunshot contusion of the femur. I have met with it in a case of gunshot fracture of the thigh. I have seen it in other instances of compound comminuted fracture of the long bones. I have also met with it several times in the stump bones of amputated limbs. Mephitic gangrene of the osseous tissue is often associated with pyæmia, ... although it does not absolutely depend for its occurrence upon pyæmia, still [it] belongs exclusively to certain depressed conditions of the vital powers—to certain depraved states of the body at large . . . . The local disease with which it was always associated, according to my observations, was inflammation of the medullary tissue of the affected bone; but the relationship between them appears to me, for the most part, to have been purely accidental, and the real cause of this peculiar rot of the osseous tissue should be sought for elsewhere, and generally in a depraved condition of the whole body, but more especially of its circulating fluids."

Dr. Lidell mentions two cases of mephitic gangrene of bone which he published in the numbers of this journal for April and July, 1865. On referring to them we find it stated, in one case, that "the *compact tissue* was *white* and the *marrow dirty grayish-brown in colour*, and *very offensive in odour*" [No. for April, 1865, p. 301], while it is said in the other case that "*On section with a saw, the gangrenous osseous tissue presented a dirty dark-green or greenish-brown colour, and an offensive odour of putrefaction;*" so that we infer that the description of the physical characters given above applies, not to the compact structure, but to the medullary tissue of the affected bone.

Though Dr. Lidell is, we believe, correct in thinking that this form of osseous disease is not usually recognized as a distinct affection by surgical writers, we cannot but think that he is mistaken in believing that it has been hitherto unobserved; thus Bromfield speaks of bones being made "rotten, even to their centre," as the result of "violent contusion or fracture," while Léveillé (quoted by Ribes) attributes to Brugnone and Penchienati (*anno* 1787) the observation that when necrosis originates from disease of the medullary cavity the marrow itself is destroyed or *putrefied* as well as its envelope. Cloquet and Bérard again clearly recognize the variation in colour in different specimens of dead bone, and quote Wilson as saying that necrosis of the compact tissue is white, but of the spongy portion of bone, yellow, brown, or black. Now although the above expressions—rotten, putrefied, etc.—may of course be only figurative, we confess that it seems to us more natural to suppose that the authors using them did actually recognize a form of dead bone which bears the same relation to ordinary necrosis, that moist does to dry gangrene of the soft parts. Coming down to modern times we find in Holmes' well-known work on the surgery of childhood, a case in which, eleven days after the removal of an ordinary sequestrum from the popliteal space, the patient died "with no rigors, or

any distinct evidence of pyæmia," the autopsy showing the periosteum entirely separated from the femur "from the epiphysis below, nearly to the middle of the bone, all of which seemed in process of dying; the medullary tissue was quite black" (page 406). We have ourselves been long practically familiar with the fact that dead bone was met with in these two forms, and can recall more than one case in which the appearances so vividly described by Dr. Lidell as belonging to mephitic gangrene were present. This form of dead bone, or, as we should like to call it, moist necrosis, is chiefly seen we believe in bones which contain a large proportion of spongy tissue (we have seen it well marked in the astragalus), but may also occur in the long bones, as the result of violence which *suddenly* deprives the part of its vitality: thus it may be seen in cases of fracture, in what Dupuytren called the primary splinters (if these be allowed to remain), or as the result of violent osseous contusion, such as is especially met with in military practice. The decision of the question whether in any particular case, death of bone shall take the form of ordinary necrosis, or of this moist variety of gangrene, which Dr. Lidell calls mephitic, depends, we believe, not upon the constitutional condition of the patient, but upon the local state of the part affected at the moment of death, whether full or not of blood and other fluids. Thus, if the whole thickness of a long bone is killed *suddenly and at once*, the marrow being full of blood, the gangrene will probably be of the *moist* variety, while if, as is ordinarily the case, the death of the part results from a *slow* process (*ostitis*) there will be a deficiency of fluid, and we will have *dry* gangrene, constituting the common form of necrosis. The state of affairs is precisely analogous to that which determines the form of gangrene in soft tissues, and the explanation we have suggested is that which Mr. Coote has given and ably defended, as accounting for the occurrence of moist or of dry gangrene in ordinary cases of mortification. (*Holmes' Syst. of Surgery*, 2d edit., vol. i. p. 152.)

By the above comments we do not wish to appear in any degree to detract from Dr. Lidell's merit, as being the first to point out clearly, in print, the distinctive characters which mark these two forms of osseous gangrene. Though we do not agree with the explanation which he gives of the phenomena in question, we fully recognize the value of his remarks upon the subject.

We are glad to observe that, in this section, Dr. Lidell has made so much, and, we may add, such judicious use of our long review of Ollier's *Traité Expérimental et Clinique de la Régénération des Os, etc.*, which was published in the number of this Journal for January, 1868; nor do we complain that Dr. Lidell has thought proper, in doing so, to ignore the reviewer's share in the matter, and to quote in every instance his words as if they were taken directly from Ollier himself. The reviewer (like Johnson's lexicographer—a harmless drudge) must expect to spin his brains for the benefit of others; being satisfied to find his labour, like virtue, its own sole reward. Had Dr. Lidell, however, deigned to hint that his knowledge of Ollier's work was entirely obtained through the medium of a review, he might have avoided the rather awkward mistake of quoting as he does on pages 417 and 449, a sentence as Ollier's, which has no equivalent in the French surgeon's text, and for which that harmless drudge, the reviewer, is entirely and solely responsible.

So much space has been occupied with the first and second sections of Dr. Lidell's volume, that we are compelled to omit noticing the third ("On Pyæmia"), which we regret the less, because, as this part of the book is brought down only to the latter part of 1865, it is now, of course, quite

out of date. No notice is taken of the labours of Callender, Savory, Bristowe, or Braidwood, to say nothing of Cohnheim, whose views, if accepted, are, we need hardly say, likely to completely revolutionize our ideas as to the possibility of pus entering the circulation.

Looking upon this volume as a whole, we cannot avoid a certain feeling of disappointment. The papers which Dr. Lidell contributed in former years to this Journal were so very good, that our expectations were possibly thereby raised to an unreasonable pitch; and we are sorry to find the contents of this book neither so new nor so exhaustive of the subjects discussed as we had anticipated. We are particularly sorry for this, because the book, from its semi-official character, as published by the Sanitary Commission, will excite more attention abroad than if it were merely issued upon the responsibility of an individual. More than this, the whole book comes, to use an old expression, as it were, "the day after the fair;" the "War of the Rebellion" is over; its lessons have been taught, and, we think, pretty well learned by those who are not past learning anything at all; and though the Horatian nine years of probation may improve the quality of poetry, any researches in so progressive a science as that of surgery must lose their freshness, if even three years elapse between the writing and the reading. The bringing to light of posthumous scientific works is always of questionable expediency; but particularly so when it is not the author, but the doctrines he inculcates, that are dead before the day of publication. J. A., Jr.

ART. XX.—*The Physiology of Man; designed to represent the Existing State of Physiological Science, as applied to the Functions of the Human Body.* By AUSTIN FLINT, Jr., M. D., Professor of Physiology and Microscopy in the Bellevue Hospital Medical College, New York; Fellow of the New York Academy of Medicine; Member of the Medical Society of the County of New York; Resident Member of the Lyceum of Natural History in the City of New York, &c. &c. *Secretion, Excretion, Ductless Glands, Nutrition, Animal Heat, Movements, Voice and Speech.* 8vo. pp. 526. New York: D. Appleton & Co., 1870.

OUR readers will remember that we have already presented them with brief reviews of the first two volumes of this work. These volumes treated of the blood, circulation, respiration, alimentation, digestion, absorption, and the lymph and chyle. The volume now before us is devoted to the consideration of secretion, nutrition, calorification, ciliary, elastic and muscular movements, and to the voice and speech. In the preparation of "The Physiology of Man," Prof. Flint has endeavoured to make each volume a separate and distinct treatise, complete in itself, the full series being intended to cover the entire subject of physiology.

The first chapter of the volume just published treats of secretion in general, the relation of this function to nutrition, the mechanism of its production and of that of the excretions, and the extent to which it is influenced by the composition and pressure of the blood and by the nervous system. The structure of the various secreting organs is also described.

The second chapter is occupied with an account of the physiological anatomy of the serous, synovial, and mucous membranes, and of the sebaceous, ceruminous, and Meibomian glands. The physical characters, chemical composition, and uses of the different serous, synovial, mucous, and sebaceous fluids are carefully described.

The whole of the third chapter is taken up with the consideration of the mammary secretion. Prof. Flint, in his anatomical description of the mammary glands, adopts the conclusions of Robin, as to the physiological changes which these organs undergo during the different periods and conditions of female life.

According to Robin and Sappey, the mammary gland, during the intervals of lactation, is not a secreting organ.

"It presents the ducts ramifying to a certain extent in the substance of the lobes into which the structure is divided, but their branches are short, and possess but few of the glandular acini that are observed in every part of the organ during lactation. This difference in the structure of the gland is most remarkable, and as it passes from a secreting to a non-secreting condition at the end of lactation, the ducts retract in all their branches, and most of the secreting *culs-de-sac* disappear. At this time the glandular tissue is of a bluish-white colour, and loses the granular appearance which it presents during activity. The ducts are then lined with a small nucleated pavement-epithelium, which is not found during the secretion of milk. These changes, pointed out by Robin, whose observations have been verified and extended by Sappey, are confined almost exclusively to the secreting structure of the glands. The interstitial tissue remains about the same, the bloodvessels, only, being increased in number during lactation. * * *

"Each acinus of the mammary gland is made up of from twenty to forty secreting vesicles or *culs-de-sac*. These vesicles are irregular in form, often varicose, and sometimes enlarged and imperfectly bifurcated at their terminal extremities. During lactation their diameter is from $\frac{1}{150}$ to $\frac{1}{300}$ of an inch. During pregnancy, and when the gland has just arrived at its full development, the secreting vesicles are formed of a structureless membrane, lined with small nucleated cells of pavement-epithelium. The nuclei are relatively large, ovoid, and imbedded in a small amount of amorphous matter, and they almost touch each other. Sometimes the epithelium is segmented, and sometimes it exists in the form of a continuous nucleated sheet. When the secretion of milk becomes active, the epithelium entirely disappears, and reappears as the secretion diminishes. This observation is due to Robin, and has an important bearing upon the mechanism of the secretion of milk.

"During the intervals of lactation, as the lactiferous ducts become retracted, the grandular *culs-de-sac* disappear; and in pregnancy, as the gland takes on its full development, the ducts branch and extend themselves, and the vesicles are gradually developed around their terminal extremities. These changes in the development of the mammæ at different periods are most remarkable, and are not observed in any other part of the glandular system."

From this description it will be seen that the mammary glands differ from other glandular organs in the fact that while in the latter epithelial cells seem to be the active agents in producing the secretions, in the mammæ the disappearance of the epithelium from the secreting *culs-de-sac* during the period of greatest functional activity of the gland leaves the work of secretion to be performed by the amorphous membrane of the vesicles alone.

A large portion of the third chapter is occupied with an account of the mechanism of the secretion of milk, the conditions which influence this secretion, such as diet, mental emotion, &c., the quantity, properties, composition, and microscopical characters of milk, &c.

The next four chapters are devoted to the excretory action of the skin and kidneys. The differences between the secretions proper and excretions, and the composition, mode of production and discharge of the excretions are briefly discussed. The physiological anatomy of the skin and kidneys is described with sufficient minuteness of detail. Prof. Flint dwells at some length, also, upon the mechanism of the formation and discharge of

the urine, fully recognizing the important relations which this act bears to the processes of nutrition and disassimilation, and the necessity of studying all the conditions by which it may be modified.

In 1821 Prévost and Dumas detected, for the first time, urea in normal blood. Their observations were confirmed and extended by Ségalas and Vauquelin in 1822, and verified in the human subject, in a case detailed by Shearman in 1848. Subsequently Marchand, Picard, Poisseuille, Gobley, and others, have shown that urea is a normal constituent of blood. Still more recently, Wurtz has proven that this substance is ordinarily present in the lymph and chyle in larger quantities than in the blood.

"These facts, which have been almost universally regarded as established, have led physiologists to adopt the view that the peculiar excrementitious principles found in the urine are not produced by the kidneys, but are formed in the system by the general process of disassimilation, are taken up from the tissues by the blood, either directly or through the lymph, and are merely separated from the blood in the kidneys; and it has consequently been pretty generally assumed that nearly, if not all, the constituents of the urine preëxist in the circulating fluid. There is, indeed, no well-defined principle in the urine that has not been actually demonstrated in the blood. As an additional argument in favour of this view of the mechanism of the urinary excretion, it has been ascertained that when the kidneys are interrupted in their function, there is a tendency to the elimination of the excrementitious principles of the urine by lungs, skin, and alimentary canal; and that these matters only accumulate in the blood after this vicarious effort has failed to effect their complete discharge.

"These ideas have seemed to be so completely justified by facts, that they have been applied to the mechanism of excretion by other organs, such as the skin and the liver; but within a few years, the older observations with regard to nephrotomized animals have been discredited; and it has been asserted, as the result of experiment, that urea and the urates do not accumulate in the blood after removal of the kidneys, but that this result only follows when both ureters have been tied. The experiments on which this idea is based have been applied mainly to the pathology of uræmic intoxication, but it is evident that they bear directly upon the mechanism of excretion. It is not assumed, however, that excrementitious principles are not formed by the disassimilation of the tissues; but it is asserted that urea and the urates are produced in the kidneys by a transformation of the excrementitious matters, creatine, creatinine, etc., which exist in the blood. It is foreign to our purpose to discuss *in extenso* the pathological conditions produced by the retention of the urinary principles in the blood; and we shall consider this question only so far as it bears upon the physiology of excretion.

"The original experiments of Prévost and Dumas are very strong arguments in favour of the view that has been so long almost unquestioned; viz., that urea is simply separated from the blood by the kidneys; but the more recent observations of Bernard and Barreswill, Hammond, and others, while they confirm the first experiments on this subject, have added very considerably to our knowledge of the mechanism of uræmic poisoning after extirpation of the kidneys. The kidneys, it has been found, can readily be removed from living animals, dogs, cats, rabbits, etc., without any great disturbance immediately following the operation. Bernard and Barreswill found that animals from which both kidneys had been removed did not usually present any distinctive symptoms for a day or two after, except that they vomited and passed an unusual quantity of liquid from the intestinal canal. During this period, the blood never contained an abnormal quantity of urea; but the contents of the stomach and intestine were found to be highly ammoniacal. During this time, also, the secretions from the stomach and intestines, particularly the stomach, became continuous, as well as increased in quantity. Animals operated upon in this way usually live for four or five days, and then die in coma following upon convulsions. Toward the end of life, the secretion of gastric and intestinal fluids becomes arrested, probably from the irritating effects of ammoniacal

decomposition of their contents, and then, and then only, urea is found to accumulate enormously in the blood.[1]

"It is thought by Bernard that the hypersecretion by the gastric and intestinal mucous membrane, in nephrotomized animals, is an effort on the part of the system to eliminate the urea, which is decomposed by contact with these membranes into carbonate of ammonia. This view is sustained by the fact that when urea is introduced into the alimentary canal in living animals, it disappears almost immediately and is replaced by the ammoniacal salts.[2] Consequently, after removal of the kidneys, we should not expect to find an increased quantity of urea in the blood, until its elimination by the mucous membrane of the alimentary canal has ceased; but the fact that it then accumulates in large quantity cannot be doubted.

"The results of the experiments of Dr. Hammond entirely correspond with those obtained by Bernard and Barreswill. He has also confirmed the fact, observed by Ségalas and Vauquelin, that urea is an active diuretic when injected in small quantity into the veins of a healthy animal;[3] and that in this case it does not produce any poisonous effects, but is immediately eliminated. But when urea is injected into the vascular system of a nephrotomized animal, it produces death in a very short time, with the characteristic symptoms of uræmic poisoning.[4] We have frequently removed both kidneys from dogs, and when the operation is carefully performed, the animals live from three to five days. In some instances they have been known to live for twelve days or even longer,[5] but death always takes place finally with symptoms of blood-poisoning.

"The experiments which are supposed to show that urea and the urates are actually formed in the kidneys—to which we have already alluded—were made with the view of comparing the effects of removal of both kidneys with those produced by tying the ureters. According to the observations of Oppler, the blood contains much more urea after the ureters are tied than after removal of the kidneys.[6] Perls states, as the result of experiments on rabbits, that no accumulation of urea in the muscular substance can be proved after removal of the kidneys; but that this occurs only after tying the ureters, and the quantity seems to be greatest in the first twenty-four or forty-eight hours after the operation.[7] Essentially the same results were obtained by Zalesky,[8] who asserts that

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[1] Bernard, Liquides de l'organisme, Paris, 1859, tome ii. p. 36, et seq. These experiments were first published by Bernard and Barreswill in the Archives générales de médecine, Paris, 1847, tome xiii. p. 449.

[2] Bernard, op. cit., p. 51.

[3] Ségalas, Jl. de Physiologie, Paris, 1822, tome ii.

[4] Hammond, Physiological Memoirs—Uræmic Intoxication, Philadelphia, 1863, p. 347.

[5] Hammond, op. cit., p. 303.

[6] Oppler, Beiträge zur Lehre von der Urämie.—Virchow's Archiv, Berlin, 1861, Bd. xxi., S. 260, et seq.

[7] Perls, in Canstatt's Jahresbericht, Wurzburg, 1865, S. 194. The experiments of Perls are not sufficiently extended to be very satisfactory. Rejecting one experiment in which the animal was killed twenty-four hours after removal of the kidneys—when no accumulation of urea could be expected—there are three examinations of the muscular substance after death from removal of the kidneys, and four after death from tying the ureters. In an examination after removal of the kidneys, 2.32 parts per 1000 of nitrate of urea were found; in the second, there were no crystals in the extract; and in the third there were slight traces of urea. These animals died three or four days after the operation. Five examinations were made of the muscular substance in animals that died after tying the ureters. In three of these examinations, urea was found in considerable quantity; and in the remaining two, urea was present in very small quantity in one instance, and in the other, it is not stated that any urea was found. No examinations were made of the blood. These experiments on the accumulation of urea in nephrotomized animals are hardly sufficient to overthrow the researches of Prévost and Dumas, and others by whom their observations have been confirmed.

[8] Zalesky, Untersuchungen über den uræmischen Process und die Function der Nieren, Tübingen, 1865.

the proportion of urea in the blood after removal of the kidneys in dogs is about the same as in the normal condition. These experiments, which are directly opposed in their results to the well-considered observations of Prévost and Dumas, Bernard and Barreswill, Hammond, and many others, cannot be accepted unless it be certain that all the necessary physiological conditions have been fulfilled. In the first place, it was positively demonstrated, as early as 1847, that urea does not accumulate in the blood immediately after removal of the kidneys, but only toward the end of life, and then it is found in enormous quantity.[1] In the second place, it is well known that the operation of tying the ureters is followed by an immense pressure of urine in the kidneys, which not only disturbs the eliminative action of these organs, but affects most seriously the general functions. Since the influence of the nervous system upon the secretions has been so closely studied, it is evident that the pain and disturbance consequent upon the accumulation of urine above the ligated ureters must have an important reflex action upon the secretions; and this would probably interfere with the vicarious elimination of urea and other excrementitious principles by the stomach and intestines. It is well known to practical physicians that an arrest of these secretions, in cases of organic disease of the kidneys, is liable to be followed immediately by evidences of uræmia, and that grave uræmic symptoms are frequently removed by the administration of remedies that act promptly and powerfully upon the intestinal canal. As additional evidence of the great disturbance of the system, aside from the mere accumulation of excrementitious principles in the blood, which must result from tying the ureters, we have the intense distress and general prostration, always so prominent in cases of nephritic colic, where there is only temporary obstruction of one ureter. The pathological condition of the kidneys which follows the operation of tying the ureters was observed by Richerand, many years ago,[2] and the observations of Oppler, Perls, and Zalesky, on this subject are not entirely novel.[3]

"From a careful review of the important facts bearing upon this question, there does not seem to be any valid ground for a change in our ideas concerning the mode of elimination of urea and the other important excrementitious constituents of the urine. There is every reason to suppose that these principles are produced in the various tissues and organs of the body during the process of disassimilation, are taken up by the blood, and are simply separated from the blood by the kidneys. There may be unimportant modifications of some of these principles in the kidneys or in the urine, such as the conversion of a certain amount of creatine into creatinine, but the great mass of excrementitious matter is separated from the blood by the kidneys unchanged."

In the seventh chapter the properties and composition of the urine are considered. Our author here presents us with an elaborate table representing, very nearly, the latest and most reliable observations upon the relative and absolute quantities of the urinary constituents. The composition of the urine, and the manner in which it is influenced by age, sex, season, periods of the day, food, muscular exercise, and mental exertion, are elaborately discussed.

The physiological anatomy of the liver is minutely described in chapter eighth. Few questions in minute anatomy have attracted more attention than the relations of the hepatic cells to the radicles of the bile-ducts, and

[1] Bernard and Barreswill, loc. cit.

[2] Richerand et Bérard, Nouveaux élémens de physiologie, Paris, 1833, tome ii. p. 142.

Richerand noted great disturbance in animals, thirty-six hours after tying both ureters. In a cat on which this operation had been performed, death took place on the third day. "The kidneys were swollen, softened, and, as it were, macerated; all the organs, all the humours, and all the blood itself, participated in this urinous diathesis." (*Loc. cit.*, p. 143.)

[3] Milne-Edwards, Leçons sur la Physiologie, Paris, 1862, tome vii. pp. 457, 459.

the origin of these ducts in the lobuli. Kiernan, in 1833, was led by his researches to suppose that a reticulated network of ducts existed in the lobules, and that these communicated with the ducts in the interlobular spaces. This view was essentially adopted by Prof. Leidy in his paper on the comparative anatomy of the liver published in vol. xv., new series, of this Journal. In his treatise on human anatomy, published thirteen years later, this observer does not offer any positive opinion upon this subject. In 1856 Dr. Beale, of London, maintained that there existed in the lobules delicate tubes, about as wide as the liver-cells, each tube inclosing a row of these cells. Kölliker at one time adopted views somewhat analogous to those of Beale. In the last edition of his work on microscopic anatomy, published at Leipzig in 1867, he abandons these views altogether. According to Prof. Flint, late researches have shown that the following is probably the true relation of the ultimate ramifications of the bile-ducts in the lobules to the hepatic cells:—

"In the substance of the lobules is an exceedingly fine and regular network of vessels, of uniform size, about $\frac{1}{5000}$ of an inch in diameter,[1] which surround the liver-cells, each cell lying in a space bounded by inosculating branches of these canals. This plexus is entirely independent of the bloodvessels, and it seems to inclose in its meshes each individual cell, extending from the periphery of the lobule, where it is in communication with the interlobular bile-ducts, to the intralobular vein in the centre. The vessels probably have excessively thin, homogeneous walls—though the existence of their membrane has not been positively demonstrated—and are without any epithelial lining, being much smaller, indeed, than any epithelial cells with which we are acquainted. This arrangement, as far as is known, has no analogue in any other secreting organ.

"Although it is within three or four years only that the reticulated bile-ducts of the lobules have attracted much attention, they were discovered in the substance of the lobules, near the periphery, by Gerlach, in 1848.[2] It is evident, from an examination of his figures and description, that he succeeded in filling with injection that portion of the lobular network near the borders of the lobules, and demonstrated the continuity of their vessels with the interlobular ducts; but he did not recognize the vessels nearer the centre of the lobule. His views, however, received very little attention, and are not even mentioned in most of the authoritative works on general anatomy. Within the last few years, Budge,[3] Andrejevic,[4] Mac-Gillavry,[5] Chrzonszczewsky,[6] Wyss,[7] Hering,[8]

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[1] This is the result of the measurements by Dr. Stiles (Bulletin of the New York Academy of Medicine, 1868, vol. iii. p. 351), of the ducts in the livers of the bullocks that died of the "Texas disease," which we have verified in the same specimen. The measurements given by Frey are about the same (Handbuch der Histologie, Leipzig, 1867, S. 558).

[2] Gerlach, Handbuch der allgemeinen und speciellen Gewebelehre, Mainz, 1848, S. 280, et seq.

[3] Budge, Ueber den Verlauf der Gallengänge.—Archiv für Anatomie, Physiologie und wissenschaftlichen Medicin, Leipzig, 1859, S. 642, et seq.

[4] Andrejevic, Ueber den feineren Bau der Leber.—Sitzungsberichte der mathematisch-naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften, Wein, 1861, Bd. xliii., I. Abtheilung, S. 379, et seq.

[5] Mac-Gillavry, Zur Anatomie der Leber, Idem, Wein, 1865, Bd. i., II. Abtheilung, S. 207, et seq.

[6] Chrzonszczewsky, Zur Anatomie und Physiologie der Leber.—Virchow's Archiv, Berlin, Jan., 1866, Bd. xxxv., S. 153, et seq.

[7] Wyss, Beitrag, zur Histologie der icterischen Leber.—Virchow's Archiv, Berlin, April, 1866, Bd. xxxv., S. 553, et seq.

[8] Hering, Ueber den Bau der Wirbelthierleber.—Sitzungberichte, etc., Wein, 1866, Bd. liv., I. Abtheilung, S. 335.

Frey,[1] Eberth,[2] Kölliker,[3] and others, have investigated this interesting question, by various methods, and have arrived at the most positive and satisfactory results. It is now demonstrated, beyond a doubt, that there are either canals or interspaces between the liver-cells in the lobules, and that these open into the interlobular hepatic ducts. It is still a question of discussion, whether these passages are simple spaces between the cells, or are lined by a membrane; but this point has no great physiological importance, and we can readily imagine that it would be exceedingly difficult to demonstrate a membrane forming the wall of a tube, the whole measuring but $\frac{1}{1500}$ of an inch. In the investigations which have thus demonstrated the arrangement of the finest bile-ducts in the lobules, the livers of rabbits have been found to present the most favourable conditions. It has been assumed, however, that in the method of study by artificial injection, the appearance of canals might be due to the extravasation of the fluid, which might possibly take on a regular arrangement between the cells. This is an error of observation that would not be unlikely to occur; but not only have these fine ducts been filled by injection, and their connection with the interlobular ducts apparently established, they have been observed filled with inspissated bile in icteric livers.[4] A method of study, very ingenious and highly satisfactory in its results, was adopted by Chrzonszczewsky. He introduced into the bloodvessels or stomach of a living animal a solution of indigo-carmine, and within one or two hours, killed the animal, when the whole network of ducts in the lobules was found unbroken and connected with the interlobular vessels. The drawings of these appearances accompanying the memoir are exceedingly beautiful.[5]

"A peculiarly favourable opportunity for observing the bile-ducts in the lobules was presented in the livers of animals that died of the so-called 'Texas cattle-disease.' This was taken advantage of by Dr. R. C. Stiles, who was able to verify, in the most satisfactory manner, the facts which have lately been established by the German anatomists.[6] In these livers, the finest bile-ducts were found filled with bright yellow bile, and their relations to the liver-cells were beautifully distinct. In the examination of these specimens, the presence of what appeared to be detached fragments of these little canals is an argument in favour of the view that they were lined by a membrane of excessive tenuity. These interesting anatomical points were demonstrated by Dr. Stiles before the New York Academy of Medicine, and we have since been able to verify them in every particular."

With regard to the secretion of bile, Prof. Flint maintains that certain elements of this fluid are separated from the blood, while others are manufactured from materials supplied by the blood in the liver-cells situated outside of the plexus of origin of the biliary duct, and subsequently taken up by these delicate vessels and carried to the excretory biliary passages. He believes also that bile is produced in the liver from the blood distributed in its substance by the portal vein and the hepatic artery, and not from either of these vessels exclusively; and that the bile may continue to be secreted, if either one of these vessels be obliterated, provided the supply of blood be sufficient.

The subject matter of the next chapter is the excretory function of the

[1] Frey, Handbuch der Histologie, Leipzig, 1867, S. 557, et seq.

[2] Eberth, Untersuchungen über die normale und pathologische Leber.—Virchow's Archiv, Berlin, Mai, 1867, Bd. xxxix., S. 70, et seq.

[3] Kölliker, Handbuch der Gewebelehre, Leipzig, 1867, S. 428.

[4] Wyss, loc. cit. [5] Loc. cit.

[6] Stiles, Bulletin of the New York Academy of Medicine, 1868, vol. iii. p. 350; Report of the New York State Cattle Commissioners, in connection with the Special Report of the Metropolitan Board of Health on the Texas Cattle-Disease.—Transactions of the New York State Agricultural Society, Albany, 1868, vol. xxvii.—1867, Part ii., pp. 1137, 1160; and Third Annual Report of the Metropolitan Board of Health of the State of New York, Albany, 1868, p. 303.

liver. Our author here treats of the general properties and composition of the bile, the origin of the biliary salts and their tests, &c. The greater part of this chapter, however, is taken up with a condensed account of Prof. Flint's researches into the origin of cholesterine, its absorption by the blood circulating through the brain, its elimination by the liver, and its accumulation in the blood in certain cases of organic, hepatic disease. With these researches our readers are familiar, as the paper in which they were originally detailed was published in this Journal in 1862.

That much vexed question, the glycogenic function of the liver, is ably discussed in chapter tenth. It is well known that in 1848, Claude Bernard, as the result of a series of elaborate experiments, announced that the liver is constantly producing sugar of the variety that had long been recognized in the urine of persons suffering from diabetes mellitus. Nine years later this observer discovered in the substance of the liver a peculiar sugar, forming material analogous in its composition and properties to starch. He demonstrated that in all animals the blood coming from the liver by the hepatic veins contains sugar; and that the presence of this principle here is not dependent upon the starch or sugar of the food. He also showed that in carnivorous animals, fed exclusively upon meat, no sugar could be found in the blood of the portal vein; but, under normal conditions, it is always present in the blood of the hepatic veins. He furthermore proved that the amount of sugar is proportionately diminished in passing from the liver to the heart, and that it finally disappeared while passing through the lungs.

The experiments of Bernard and the conclusions based upon them, have given rise to a very animated controversy among physiologists. Lehmann, Frerichs, Poggiale, Leconte, and others have confirmed them; while Figuier, Pavy, McDonnell, Meissner, Jaeger, Schiff, and others have failed to verify them. In Great Britain the conviction prevails that the liver does not produce sugar during life, and that the sugar found by Bernard and others is due to *post-mortem* action. With the view of harmonizing, if possible, the discordant observations of Bernard and Pavy, Prof. Flint instituted a number of experiments which he details at length:—

"From our own experiments we have come to the conclusion that Dr. Pavy and those who adopt his views cannot consistently deny that sugar is constantly formed in the liver and discharged into the blood of the hepatic veins; nor can Bernard and his followers ignore the fact that the liver does not contain sugar during life; although, as has been shown by Pavy, and more specifically by McDonnell,[1] sugar appears in the liver in great abundance soon after death.

"In the experiments that we have just detailed, which are simply typical examples of numerous unrecorded observations, we attempted to verify the observations of Pavy without losing sight of the facts observed by Bernard, and to verify the experiments of Bernard in the face of the apparently contradictory statements of Pavy. When an animal is in perfect health, has been kept quiet before the experiment, and a piece of the liver is taken from him by two sweeps of the knife, the blood rinsed from it and the tissue cut up into water already boiling, the whole operation occupying only ten seconds (as was the case in Experiment III.), the liver is as nearly as possible in the condition in which it exists in the living organism. As this was done repeatedly in animals during digestion and in the intervals of digestion, and an extract thoroughly made without finding any sugar, we regarded the experiments of Pavy as entirely confirmed, and the fact demonstrated that the liver does not contain sugar during life. On the other hand, when we made the experiment on the

[1] Observations on the Functions of the Liver, Dublin, 1865.

liver as above described, and, in addition, took specimens of the portal blood and the blood from the hepatic veins, under strictly physiological conditions (as was done in Experiment IV.), and found no sugar in the portal blood or in the substance of the liver, but an abundance in the blood of the hepatic veins. it was impossible to avoid the conclusion that the sugar was formed in the liver, and was washed out in the blood as it passed through.

"In treating of the mechanism of the formation of sugar in the liver, we will describe more fully the glycogenic matter; but, taking into consideration the demonstration of the presence of sugar in the blood of the hepatic veins by Bernard; his discovery of the *post-mortem* production of sugar in a liver washed sugar-free, probably from a substance remaining in the liver and capable of being transformed into sugar; the negative results of the examinations of the liver for sugar by Pavy; and, adding to this our own experiments upon all of these points, we are justified in adopting the following conclusions:—

"1. A substance exists in the healthy liver, which is capable of being converted into sugar; and inasmuch as this is formed into sugar during life, the sugar being washed away by the blood passing through the liver, it is perfectly proper to call it glycogenic, or sugar-forming matter.

"2. The liver has a glycogenic function, which consists in the constant formation of sugar out of the glycogenic matter, this being carried away by the blood of the hepatic veins, which always contains sugar in a certain proportion. This production of sugar takes place in the carnivora, as well as in those animals that take sugar and starch as food; and it is, essentially, independent of the kind of food taken.

"3. During life, the liver contains only the glycogenic matter and no sugar, because the great mass of blood which is constantly passing through this organ washes out the sugar as fast as it is formed; but after death, or when the circulation is interfered with, the transformation of glycogenic matter into sugar goes on; the sugar is not removed under these conditions, and can then be detected in the substance of the liver."

The ductless glands receive attention in the next chapter. Our author here describes the minute anatomy of the spleen, suprarenal capsules, thyroid, thymus, and perineal glands, and the pituitary body. Notwithstanding the labour bestowed upon the study of these organs, their function still remains a *terra incognita* in physiology.

In the next three chapters our author treats of nutrition, the nature of the forces involved in it, and the conditions which influence it; animal heat and its sources, the circumstances which produce fluctuation in the temperature of the body, the relations of animal heat to the various processes of nutrition, the influence exerted upon it by the nervous system, and the manner in which it is equalized. In this part of his work Prof. Flint endeavours to determine in what part or parts of the organism heat is generated; what is the relative importance of the several processes of nutrition in regard to the amount of heat generated; what are the principles invariably and of necessity consumed and produced in the organism in calorification; what is the relative importance of the principles thus consumed, and the products thus generated and thrown off; and lastly how far we have been able to follow the material transformations in the organism which involve the consumption of certain principles, the production of new compounds, and the generation of heat.

Not the least important part of the volume before us is comprised in the last three chapters, in which the general properties of contractile tissues, muscular contraction, the passive organs of locomotion, and the physiology of the voice and speech are taken up in detail and examined at length.

With this brief notice of its contents, we take leave of the third part of Prof. Flint's admirable treatise, cordially recommending it to the careful examination of those interested in physiological studies. J. A. M.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXI.—*Guy's Hospital Reports.* Edited by C. HILTON FAGGE, M. D., and ARTHUR E. DURHAM. Third Series, Vol. XV. 8vo. pp. xvii., 652. London: John Churchill and Sons, 1870.

THE present volume of these Reports will, it is believed, fully sustain the reputation possessed by this most excellent series. Many of the papers are illustrated by plates (two of them coloured) and by wood-cuts, there being twelve of the former and eleven of the latter. In accordance with our usual custom we present to our readers brief analytical and critical notices of all the contributions to this volume, and have grouped together first, those which relate to the various branches of practical medicine, and, secondly, those which refer to surgery.

Art. I. *Select Clinical Cases, including cases of Labio-Glosso-Laryngeal Paralysis; Exophthalmic Goitre; Arterial Pyæmia; General Chronic Arteritis; Saturnine Gout,* by SAMUEL WILKS, M. D.—*Labio-glosso-laryngeal paralysis* affects, as the name implies, the lips, mouth, tongue and larynx, and, therefore, as might be supposed, the functions of eating, swallowing and talking are much interfered with. The nerves known as the seventh, eighth and ninth are in part paralyzed. The following are said to be some of the phenomena presented by this affection: loss of expression, from partial paralysis of the facial nerves; loss of the power of utterance, from paralysis of the muscles not only of the face and tongue, but also of the larynx; difficulty of eating, from the fact that the food collects between the cheeks and gums; inability to swallow, or to retain the saliva; and absence of sensibility of both the velum and larynx. None of the muscles concerned in respiration are paralyzed.

Dr. Wilks, in explanation of this peculiar paralysis, says that "it has long been considered that there is a region in the medulla which may be called the respiratory tract, a region to which branches of all the nerves engaged in the respiratory process may owe their origin; in like manner it would appear that as a large number of parts are engaged in the act of talking, so the nerves supplying them must be stimulated from a common centre, and thus the explanation how so complex a function should suddenly cease from lesion of one small spot." Some observations of Mr. Lockhart Clarke go far towards proving that the above hypothesis is correct; for he has demonstrated that there is a close anatomical connection between the nuclei of the hypoglossal, vagus, spinal accessory, facial and trigeminal nerves, and it is well known that these nerves send branches to all the parts used in speaking. Five cases of this form of paralysis are reported. It sometimes accompanies hemiplegia, and, occasionally, progressive locomotor ataxia.

Three cases of exophthalmic goitre are next reported; one is of unusual interest from the fact that there was a post-mortem examination. In discussing the nature of this disease Dr. Wilks maintains that it is not likely to be due either to paralysis, or to excessive stimulation of the sympathetic, for in one case the heart's action would be diminished, and in the other the calibre of the vessels of the head and neck would be diminished. In the fatal case the cervical sympathetic and the ganglia were carefully examined. To the naked eye the only change to be discovered was an excessive development of fibrous tissue, and nothing further seems to have been detected by Dr. Moxon, who made a microscopical examination, for he tells us that "the microscopic character of the ganglia, like the macroscopic, only gave us, as signs of disease, an apparent

excess of fibrous tissues in the structure of the ganglionic tissue, with an apparent enlargement of the capillary vessels. On the other hand, against this we find the natural minute elements of the ganglion to have a healthy appearance."

A plate representing the appearance of this patient accompanies this paper.

Arterial pyæmia, Dr. Wilks regards as a frequent accompaniment of chronic disease of the heart; the symptoms are, however, either entirely overshadowed by the more severe ones attendant on valvular disorder, or, if observed, thought to be dependent upon rheumatism. It may exist in cases in which there is no history of a primary heart affection, or it and endocarditis may be set up at the same time and by the same influences. It should be suspected wherever there are obscure febrile conditions, especially when these are accompanied by rigors and by a gradual increase in size of the liver and spleen.

Dr. Wilks, while fully acknowledging that valvular vegetations are the most frequent causes of obstruction of the arteries, says that there are many cases in which Rokitansky's view that the fibrin is directly deposited from the blood must be accepted, and others in which we can only suppose that the deposit in the vessels and that upon the valve must have taken place at the same time. These latter present many of the symptoms of venous pyæmia, the only difference being that the source of infection is in the interior of the body.

A case of general *chronic arteritis* is also reported. In this case some of the principal arteries in the body were so thickened and obstructed that their pulsations could only be felt with the greatest difficulty. The symptoms most complained of during life were severe pains in the limbs; these were sometimes so severe as to extort cries from the patient, and were only relieved by the subcutaneous injection of morphia. Other symptoms were excessive feebleness and great frequency of the pulse, great emaciation, feelings of numbness in the legs, tumultuous action of the heart, and slight albuminuria.

The association of *gout with plumbism* is so frequent that Dr. Wilks is inclined to think that either individuals with a gouty diathesis are more susceptible to the action of lead, or, that on the other hand, the action of lead may set up those mal-assimilations which result in the production of an excess of uric acid. Certain it is that we see in cases of what he designates as saturnine gout the same pathological changes in various tissues of the body as occur in pure gout, for instance—the degeneration of the bloodvessels and the granular contraction of the kidneys. The direct effects of lead upon the system are moreover not the same as those seen in cases where gout has supervened.

Art. VII. *On the Processes for Detecting Blood in Medico-Legal Cases*, by ALFRED S. TAYLOR, M. D., F. R. S.—In an article in the 13th volume of these Reports, which was noticed in the October number of this Journal for 1868, Dr. Taylor describes Van Deen's process for the detection of blood in medico-legal cases, by the employment of the peroxide of hydrogen and the freshly precipitated resin of guaiac. In the experiments there detailed the watery solution of the peroxide of hydrogen was used, but Dr. Taylor has since found so much difficulty in obtaining pure aqueous solutions of uniform strength and of good keeping qualities, from the constant presence of either sulphuric or hydrochloric acid, both of which affect the precipitated resin of guaiac, that he has lately used the ethereal solution sold under the name of ozonic ether.

To this paper is added an article "On the Detection of Blood by Means of the Spectrum-Microscope. By H. C. SORBY, F. R. S., &c. &c."

Art. VIII. *On "Tetany," or Remittent Tetanus*, by W. MOXON, M. D.—In the case reported by Dr. Moxon, a boy of 3 years of age, feeble and rickety, was the subject of peculiar seizures, which seem to have come on with difficulty of breathing, the breath being, to use the mother's words, "heavy, hard and short, as if he had inflammation on the chest." A little later the backs of the hands were observed to be swollen, and the hands and feet to be cramped; the thumbs being turned in across the palms and the forearms strongly pronated. The feet were generally similarly affected, the great toes flexed and adducted, and the other toes flexed and gathered towards them.

Dr. Moxon says this affection is undescribed in any of the works of the systematic writers on diseases of children. This is an error. A very good account

of it is given by Messrs. Rilliet and Barthez, under the title "Contracture (Convulsion externe tonique)."

Art. X. *Remarks on Certain Cutaneous Affections; with Cases. Scleriasis; Ichthyosis; Pemphigus; Rhinoderma; Lichen Planus; Molluscum Contagiosum; Tinea Favus*, by C. HILTON FAGGE, M. D.—It will be remembered that Dr. Fagge contributed to the 13th volume of *Guy's Hospital Reports* a paper on "Keloid, Scleriasis, Morphœa and some Allied Affections," which was noticed in the number of this Journal for October, 1868. It was there shown that the disease generally known as the Keloid of Addison is intimately allied to a complaint presenting some different characters, and first described by Thirial under the name of Sclérème des adultes, and more recently called Scleroma, Scleriasis or Sclerodermia. The keloid of Addison, Dr. Fagge looks upon as a chronic form of the disease, of which scleriasis is the acute. But since the duration of even the more transitory variety is very much longer than that of any disease ordinarily termed acute, he proposes to designate the two forms respectively as diffuse and circumscribed.

Dr. Fagge also reports a case of "*Diffuse Primary Carcinoma of the Skin*," which presents, he thinks, a striking resemblance to a case reported by Dr. V. Rasmussen, in the *Edinburgh Medical Journal*, for September and October, 1867, and regarded by him as a case of scleriasis.

Several cases of *ichthyosis* are reported, and some new facts in regard to this curious disease are to be found in this communication. Dr. Fagge dissents from Dr. Wilson's opinion that the form of ichthyosis which the latter calls xeroderma saurioides consists merely in "an altered state of the sebiparous function, and an accumulation of the sebaceous substance on the skin in the form of dark gray or greenish scales or spines," as he believes that in any disease to which the name of ichthyosis would be given at the present day, an alteration and hypertrophy of the papillæ of the corium and their epithelium will be found. A wood-cut is introduced to show the superposition of the epidermic scales, one above the other. Another wood-cut shows several hairs, with tufted extremities, lying side by side, but having their roots at different levels, all entangled in the epidermic scales. This arrangement Dr. Fagge regards as almost demonstrative proof that ichthyosis does not consist in an increased production of the epidermis, but rather in an abnormal adhesiveness of the epidermic scales, which enables them to resist the influences which ordinarily remove the superficial layers of the cuticle, and to remain heaped the one over the other, for it can hardly be doubted that all these hairs, embalmed as it were in a single ichthyotic scale, have been formed within the same follicle, and have been successively shed from it. From the cases reported, we learn that this cutaneous disease is often complicated with other eruptions, such as eczema, impetigo, and pemphigus, and that the subjects of it are occasionally stunted and deformed, from which Dr. Fagge argues its constitutional nature.

Several cases are referred to to show that Devergie's statement that "wherever a bleb appears without external cause the patient has pemphigus" is one that cannot be accepted without limitation. In one of the cases bullæ appeared on the skin of a woman exhausted by nursing, while their frequent appearance after injuries of nerve trunks, in urticaria, erythema nodosum, eczema, scabies, and in the anæsthetic form of elephantiasis Græcorum, is of course adverted to. A very interesting history of a case of pemphigus serpiginosus is included in the paper.

Under the name of *Rhinoderma* Dr. Fagge describes a disease, called by Devergie pityriasis pilaris, in which the skin is rendered rough like a rasp by the presence of horny accumulations in the mouths of the hair follicles.

The name of *Lichen planus* was given by Mr. Erasmus Wilson to an eruption of broad, flat papules of a crimson red colour, and having a smooth, shining, "glazed," or "burnished" surface. The papules are very little raised above the level of the skin, and are at first distinct, but after a time, as they increase in number, cohere together. Dr. Fagge has found the disease to be attended with a good deal of irritation of the skin, although the contrary is asserted to be the case by Mr. Wilson. Five cases are reported.

Molluscum contagiosum is referred to, partly for the purpose of introducing a plate taken from a drawing by Mr. Davies-Colley, of sections of a tumour removed from a child afflicted with this disease, and partly to record the fact that all Dr. Fagge's attempts to propagate this disease by inoculation had failed. In view, however, of the frequency with which this disease is found in different members of the same family, Dr. Fagge does not regard the failure of his experiments as proof that the disease is not contagious.

Tinea Favus forms the concluding subject of this paper. In all the cases, of which notes are given, epilation was practised, and with favourable results. A plate is appended to show that frequently in this disease a number of tubes may be contained within the hairs themselves, and it is to their presence that Dr. Fagge attributes the persistence and reappearance of the disease after all the crusts have been removed from the head by parasiticide lotions.

Art. XI. *Thermometric Observations in Clinical Medicine*, by J. F. GOODHART, House Physician.—This, although a very valuable paper, and one which shows much care in its preparation, does not admit of sufficient condensation to bring it within our limits. We can, therefore, only commend it to such of our readers as may be interested in the use of the thermometer in the study of disease. The diseases in which observations were made, are scarlatina, typhoid and typhus fevers, diphtheria, measles, febricula, syphilis, ague, relapsing fever, erythema nodosum, acute rheumatism, tubercular meningitis, tuberculosis, pleurisy, acute Bright's disease, and leucocythæmia. The action of medicine in causing a reduction of temperature is also recorded. From the observations which he has made, Dr. Goodhart is inclined to think that the rise in temperature in the early stage of typhoid fever is not a progressive one, as has been maintained by some German observers; on the contrary, he believes that the thermometer will often fail to distinguish this from simple continued fever. A temperature of 107° Fahr. occurring in any other diseases than relapsing or intermittent fever he regards as invariably indicative of a fatal result.

In regard to the influence of the act of dying on the temperature, Mr. Goodhart says:—

1st. "That except in isolated instances, and these cases of long-standing disease with emaciation, the temperature is not materially lowered at the time of death.

2d. "That while a rapid rise of temperature is often observed, it occurs not in such cases as those of death from hemorrhage, accidents, collapse, etc., but rather in patients who are already so seriously ill that a difficulty with regard to them could scarcely arise."

Art. XII. *Cases Illustrating the Influence of Opium and some of its Constituent Principles in Controlling the Elimination of Sugar in Diabetes*, by F. W. PAVY, M.D., F. R. S.—Further experience has confirmed the favourable opinion formed by Dr. Pavy in regard to the power which opium and some of its preparations possess in controlling the elimination of sugar in diabetes. This paper contains the report of eleven cases so treated, and in all great improvement was effected. In some cases cure is even said to have taken place, but the latter is a statement which is contradicted by the fact that among the patients whose histories are detailed is that of the woman whose case was reported in vol. ii. of the *Clinical Society's Proceedings*, and noticed in the last number of this Journal, and who, notwithstanding that a complete recovery was supposed to have taken place, returned to the hospital with a recurrence of the diabetic condition of the urine. Of the preparations of opium, codeia and morphia appear to be most efficient and to give rise to the fewest unpleasant symptoms. On the other hand, narceia and narcotina appear to be inert, as far as concerns the possession of any power to restrain the excretion of sugar. Codeia has the great advantage over opium and morphia that it does not exert the same narcotic and constipating effects or diminish the appetite to the same extent. In one case, the case above alluded to as having been already noticed in this Journal, codeia sufficed to cause a disappearance of the sugar from the urine without a restriction of the diet. The dose of codeia is at first half a grain three times daily, and afterwards gradually increased. In some of Dr.

Pavy's cases the dose was increased gradually until ten grains three times a day were administered.

Art. XIV. *On the Necessity for a Clinical Nomenclature of Disease*, by W. Moxon, M.D.—This paper consists principally of a full criticism of the nomenclature of disease recently adopted by the Royal College of Physicians. As the latter has already been noticed in this Journal, it is not necessary to allude further to Dr. Moxon's remarks than to say that he thinks we ought "to have the names of diseases made to refer primarily and chiefly to their clinical nature; and secondly, to have an arrangement introduced such that the nature of a disease may be accurately defined apart from its anatomical results; and thirdly and chiefly, that the nomenclature shall correspond to the actual clinical grouping of the symptoms of disease, rather than to the anatomical or physiological divisions of the body and its functions."

Art. XV. *Cases of Successful Version after Failure of the Forceps*, by J. Braxton Hicks, M.D., F. R. S.—Five cases are reported by Dr. Hicks, in which, after the failure of the forceps, delivery was accomplished by turning. In another case, version was performed with complete success in the second labour, although in the first it had been thought necessary to have recourse to craniotomy. Dr. Hicks admits that it is quite possible that in most of these cases the use of an instrument of greater compressing power than is generally used in England might have rendered version unnecessary, but thinks that much more damage would be inflicted upon the tissues both of the mother and child; he never having seen a case in which there was any evidence of injury to the mother by traction after turning. The use of chloroform has, moreover, removed the greatest objection to turning—the pressure to which the funis may be subjected during delivery, as a thorough condition of relaxation of the uterus may be maintained during the operation.

Art. XVI. *Clinical Notes*, by S. O. Habershon, M.D.—Inflammation of the diaphragmatic pleura presents symptoms which differ very considerably from those usually seen in pleurisy. The pain is agonizing, and the patient dreads the necessary movement of inspiration. His expression is one of extreme suffering and distress, his countenance becomes lurid, and apnœa is threatened because he dare not breathe. If the right side be the one affected, the symptoms are often mistaken for those of disease of the liver; if the left side, they frequently give rise to the suspicion that the spleen, stomach, or heart is diseased. The circumstance that where the diaphragmatic surface is exclusively inflamed, no friction sound is heard, and the other physical signs are wanting, of course increases the difficulty of diagnosis very materially. The following are mentioned as some of the most frequent of the peculiarities presented by diaphragmatic pleurisy: The suddenness of the pain and its great intensity; the severity of the dyspnœa; the comparative absence of the physical signs, as well as of febrile excitement; the presence of pain in the shoulder; irritability of the stomach if the left, and jaundice if the right side be affected. Resolution of the inflammation is the most frequent termination of the disease, but in some cases effusion, and in others consolidation of the lung results. The pain in the right shoulder and the irritability of the stomach are explained by the nervous connections between those parts and the diaphragm. "The diaphragm receives the phrenic nerve upon its upper part; the nerve spreads out in a web-like manner on the lower aspect; the phrenic is in close relation in the neck with the nerves which reach the shoulder, and below, it is brought into direct connection with the nervous supply of the liver on the one side, and with the vasomotor filaments to the stomach on the other." Dr. Habershon tells us that in some cases it will be necessary to exercise care in the diagnosis, for intense pain in the side may be due to the neuralgia which precedes herpes zoster, or it may arise from disease of the spine, from local tumours or abscesses, from periostitis or perichondritis, from neuralgia dependent upon uterine disease, or from a direct injury, as a fractured rib.

Several cases of *hæmatemesis* from various causes are next given, and these are followed by some remarks on the internal administration of carbolic acid. After alluding to the employment of carbolic acid in diseases of the mouth, throat, and bronchi, Dr. Habershon calls attention to its use in many functional

and organic diseases of the stomach in which fermentative action takes place, whether dependent upon the development of cryptogams or simply chemical in its nature. In any case, however, in which there is evidence of inflammatory disease of the stomach, the acid is contraindicated. On the other hand, in cases where the tongue is pale and flabby, even if furred, and the general symptoms are those of weakness, the acid will be found of service, especially if at the same time there is an absence of pain and tenderness except when distension occurs from the evolution of gases due to fermentation. It may be used even when gastric ulcers are known to exist, if the active stage of ulceration be passed.

Another indication for the employment of the remedy is flatulence, especially when the discharges from the bowels are mixed with large quantities of mucus. If diarrhœa coexist with flatulence, it is well to combine with it lime or an astringent, as gallic acid; if, on the contrary, constipation be the complication, the following formula will be of service: ℞.—Acid. carbolic., guaiac, resin, āā gr. j; pulv. rhei, gr. ij to gr. iij once or twice a day after meals.

The paper concludes with the report of two cases of injury to the head, and some remarks on that subject.

Art. XVIII. *On some Affections of the Nails*, by C. HILTON FAGGE, M.D.—The fact that the nails may become diseased, either in conjunction with the skin or independently of it, is perhaps not so generally and thoroughly understood as it should be. In this paper will be found cases of disease of the nails dependent upon parasites, upon secondary syphilis, or coexisting with the more ordinary forms of skin diseases. In one case an affection of the finger-nails occurred in a person who was suffering, it was believed, from Elephantiasis Græcorum.

Art. XX. *Numerical Analysis of the Patients treated in Guy's Hospital from* 1861 *to* 1868, by J. C. STEELE, M.D.—This analysis is similar to that which appeared in the journal of the *Statistical Society*, and which embraced the septennial period ending 31st December, 1861. From this analysis we learn that the hospital accommodation of Guy's consists of 572 beds, of which 344 are reserved for surgical cases, 216 for medical, and 12 are employed mainly for private cases. We regret that our limits do not permit us to give an abstract of this very valuable paper, which we would recommend all those specially interested in statistical inquiry to read. It is provided with fifteen tables. J. H. H.

We shall now invite the attention of our readers to those papers which are specially interesting to surgical practitioners; the first in order is

Art. II. *Statistics of Subclavian Aneurism*, by ALFRED POLAND.—This is an elaborate and very valuable paper, and was originally designed as an appendix to the author's "Case of Fusiform and Tubular Aneurism of the Subclavian Artery," which appeared in the last volume (vol. liii.) of the *Medico-Chirurgical Transactions*, and was noticed in the number of this Journal for April, 1870, page 472.

Mr. Poland has collected no less than 125 cases, of which, however, a few are not available for statistical purposes. He has carefully gone over the cases tabulated by Koch, and has been enabled to rectify several errors in the German writer's work; hence the present paper may be justly considered as the most important contribution yet made to the literature of subclavian aneurism. Mr. Poland's first table, which alone occupies twenty-eight pages of the "Reports," gives a synoptical view of the whole number of cases, classified according to the mode of treatment ultimately resorted to in each instance; and his second (of fourteen pages) shows the condition of the artery, of the sac and surrounding parts, and of the heart and arteries generally, in those cases in which a record as to these points has been obtained. Following these elaborate tables are various statistical deductions of great interest to surgeons: thus we find that in nearly three-fourths of the whole number of cases, the right side of the body was affected, 85 cases involving the right side exclusively, 28 the left, 2 both sides, and in 5 cases the side not being stated; the affection is much more frequent among men than among women, 100 cases occurring in

the male sex against only 11 in the female. The *ages* of the males are recorded in 79 cases; of these in 24 the patients were under 40 years, in 28 from 40 to 49, in 17 from 50 to 59, and in ten over 60 years. Of 121 cases recorded, no less than 67 occurred in England, Scotland or Ireland, our own country furnishing 18, France 16, Germany 6, Russia 5, Italy 4, etc. etc. *Occupation* does not appear to exert any predisposing influence in causing the affection: "The occupation appears to be neither a predisposing nor an exciting cause, and this tends to show that the cause is much more general, viz., injury to which all are liable—or disease of the arterial system, to which all are equally prone under particular morbid circumstances. Few of the sufferers attributed the disease to their occupation, but rather referred it to some antecedent injury or blow, or to some affection, such as rheumatism, syphilis, etc." The *cause* of subclavian aneurism appears to be in more than half the number of cases an idiopathic change in the structural condition of the artery: in about one-third of the whole number of cases there was a history of injury, which was sometimes the only cause, and sometimes merely a concomitant with the previously existing structural change of the parts involved. The following table, which we quote, exhibits the facts bearing upon this point in a very succinct manner.

"Résumé of Causes.

	A.—Direct Proof.			B.—Assumed or Conjectural.				
Assignable Cause.	Atheroma.	Dilatation.	Healthy.	Post mortem, but vessel not examined.	No post-mortem.	Recovery.	Uncertain.	Total.
Spontaneous . . .	17	5	...	7	3	15	...	47
Traumatic	13	3	4	10	3	9	1	43
None stated . . .	...	6	...	2	8	7	1	24
Specimens	3	...	...	...	...	...	4	7
Total	33	14	4	19	14	31	6	121

"Thus in 33 there were distinct proofs of atheroma.

14 the artery or aorta was dilated and the disease cannot be called traumatic.

25 the aneurism was acknowledged to be spontaneous; no evidence — to the contrary.

72 cases, all fairly to be set down to idiopathic causes."

The *situation* of the aneurism is definitely stated in 98 cases; the whole course of the artery from origin to axilla was involved in 13, the first portion alone in 9, the first portion and innominate in 3, the first portion and carotid in 1, the second and third portions in 9, the second and third portions and the axillary in 1, the third portion alone in 25, the third portion and axillary in 26, and the axillary and confines of subclavian at first rib in 11.

The *size* of the aneurism varies greatly in different cases; various terms of comparison are used, ranging from a "small bean" or a "pigeon's egg," up to a "child's head" or a "forty-eight pound shot."

The most frequent *symptoms* are alteration of pulse (generally diminution) on affected side, pain, tingling, numbness, or anæsthesia; loss of motor power (occasionally accompanied with spasm); diminished temperature, with œdema; a sense of suffocation, dyspnœa, dysphagia, hæmoptysis, giddiness and fainting, insomnia (in one case drowsiness), contracted pupil, increased carotid pulsation (absence of pulsation in one case), turgid state of superficial veins, clubbed fingers, etc. Epilepsy occurred in one instance.

The affections which may complicate the *diagnosis* are, chiefly, (1) glandular and other tumors, (2) chronic abscess, (3) exostosis of the first rib, (4) neuroma of the brachial plexus, and (5) aneurisms of neighbouring vessels.

Mr. Poland's remarks upon "*the natural course, progress, and termination of subclavian aneurisms,*" bring out one fact that we cannot but think extremely significant: this is that of 49 cases in which no active surgical treatment was employed, no less than 14 underwent a spontaneous cure; in 14 more the cause of death is not known or is known to have been some independent affection; while the aneurism itself certainly caused death in only 21.

The duration of life in fatal cases under different modes of treatment is illustrated by several tables, which show, as might be expected, that death, in fatal cases, is more rapid after the adoption of active surgical measures than after expectancy; this is, however, no argument against operation, for the risk of hastened death is, of course, one which is necessarily incurred in the practice of almost all operative procedures.

Mr. Poland reserves his *Statistics and Remarks on the Varied Methods of Treating Subclavian Aneurism*, for a future volume of the Reports, having already occupied a large portion (110 pages) of this, an act which, in our judgment, requires no apology, for we cannot conceive that the space could be better filled.

Art. III. is called *Some Remarks on Syphilis and Chancre*, by J. COOPER FORSTER.—This is a most sensible and practical paper, and we gladly commend it to the attention of all our readers: there is only one point which we are disposed to criticize, and that is the author's application of the term *chancre* to the non-infecting or simple sore, which we usually recognize under the name of *chancroid*. The word *chancre* is, we think, so firmly fixed in the minds of the profession as indicative of the initial lesion of syphilis, that it is futile to attempt now to invest it with a different meaning: better retain it with its present signification, and invent some new name (and we confess that neither chancroid nor simple sore is quite satisfactory) for the common, non-infecting, venereal, but not syphilitic ulcer.

From what we have said it will be perceived that Mr. Forster is, in the language of the day, a *dualist;* it is, indeed, to our mind, one of the most cheering signs of the time, that all practical and reasoning surgeons are gradually approaching uniformity of faith upon this topic: it will not, we suspect, be a great many years before the only remaining *unicists* will be, either those who cannot investigate the subject for themselves, or those who, of choice, blindly follow the doctrines of their predecessors, reverencing more the *idola* of authority than the instructions of nature.

Though clear in his faith, Mr. Forster (like every honest dualist) confesses the occasional impossibility of distinguishing the infecting from the non-infecting sore: hence he recommends early cauterization with nitric acid and lunar caustic in all doubtful cases: "Supposing the sore to be true syphilis, or about to become hard, no harm is done; and if it be a chancre or local soft sore only, it most assuredly will be thus destroyed, and a healthy, granulating surface will arise, which will quickly heal." With regard to constitutional treatment Mr. Forster says, "If I am called upon to see a sore that has existed some weeks, presenting the typical manifestation of hardness, and particularly if there exist any enlarged glands in the groin, I consider the application of an escharotic to the sore useless; I generally, under these circumstances, order small doses of mercury at once, either by fumigation, by inunction, or internally, in the shape of Pil. Hyd. Should, however, there be the slightest doubt in my mind of the true syphilitic character of the sore, I defer the remedy until the eruption appears, believing that I should do but little good by hastening its adoption." We are somewhat disposed to doubt the possibility of hastening or modifying the natural evolution of syphilis by the use of mercury during the primary stage; if, however, the "*pleiade ganglionaire*" be well marked, and if the patient (as often happens) be very anxious for constitutional treatment, we believe the safest preparation of mercury to be the protiodide, given in small doses, and well guarded with opium.

We observe that Mr. Forster condemns the application of caustics to phagedænic sores, relying upon frequent washings and the use of opium externally, and upon iron and opium "given internally in no sparing doses."

Art. IV. *Contributions to the Physiology of Binocular Vision*, by JOSEPH

Towne.—This, which is illustrated with two lithographic plates, is another of Mr. Towne's valuable papers on the physiology of vision, and is characterized by the same closeness of reasoning and clearness of description which marked its predecessors; it is not, however, a paper of which we can very well furnish an abstract, and as there is yet before us much of surgical interest in the present volume of "Reports," we will pass on to

Art. V. *Further Observations on Catarrh of the Tympanum*, by James Hinton.—This is a sequel to a paper published by Mr. Hinton in the last volume of the "Reports" [see number of this Journal for July, 1869, page 192], and gives additional proof of the benefits to be derived from incisions of the membrana tympani, and the evacuation of confined mucus. "Among the signs of the presence of mucus in the tympanum, a very characteristic one—though by no means constant, and not in itself to be taken as decisive—is the patient's own feeling of something being present in the ear, and moving as the head is moved. In some cases this feeling is so strong that it gives rise to the habit of giving the head a peculiar shake, as if to shake something in the ear out of the way, especially during the attempt to listen. Another peculiarity of hearing, which some time ago attracted my attention, but which I then failed to comprehend, I believe has a similar explanation, viz., the hearing better when the head is held down on the affected side. The difference is sometimes very marked, and I have recently observed it to exist with other palpable evidences of retained secretion." After incision of the membrana tympani, the accumulated mucus will sometimes project through the opening and may then be drawn out with forceps; in other cases it is necessary to resort to syringing with mild alkaline solutions "not by means of the Eustachian catheter, but in the opposite direction, applying the syringe to the meatus. The nozzle being well covered with elastic tubing, so as pretty closely to fit, without hurting, the meatus, the stream may be sent safely, even with considerable force, *provided the Eustachian tube be open*, and will flow freely through it, escaping by the nostril, the head, of course, being bent well forward. In this way masses of old secretion may be removed from the tympanic cavity in almost every case, and in some cases in quantities almost incredibly large. The cleansing by this means should be repeated frequently—every second or third day is best—until all appearance of any accumulation cease, and then a weak solution of sulphate of zinc (gr. ij–x ad ℥j) may be substituted and used in the same way." Obstruction of the Eustachian tube is a not infrequent complication of tympanic accumulation, and is usually remediable by inflation during swallowing, and by syringing through the tympanum, as above directed. In some cases, however, more active measures are required. "The most efficacious means for this end are, besides syringing solutions of the alkalies, or of nitrate of silver, or sulphate of zinc into the tube, the introduction of bougies of laminaria, or of very small elastic tubes passed through the Eustachian catheter, and along the tube as far as possible; air or fluids being then injected through them, so as to exert a direct pressure upon the constricted portion." Three cases are detailed in which recovery of hearing followed the treatment by incision, one in which only temporary improvement was obtained, and one which was not at all benefitted.

Art. VI. *Cases Illustrating the Diseases of the Upper and Lower Jaws, with Remarks*, by Thomas Bryant.—This valuable paper contains a record of forty-six cases, each of which is of interest to practical surgeons. The paper is divided into three parts, the first treating of necrosis of the bones entering into the formation of the jaws, the second of cystic tumours, and the third of solid tumours connected with the jaws. With regard to the treatment of necrosis, Mr. Bryant says, "When dead bone can be made out to exist, either in the upper or lower jaw, there is but one form of practice which ought to be entertained, and that is its removal. It should be removed, also, with as little disturbance to the soft parts or to the new bone-forming tissues, such as the periosteum, as possible, and it should likewise be removed from the mouth. When this latter practice is impossible or impolitic, from any cause, the surgeon should take good care that his incisions are made where they will be subsequently little seen. . . . In necrosis of the upper jaw the bone can always

probably be removed by means of incisions made *beneath* the cheek; an incision *through* the cheek never seems necessary. In necrosis of the lower jaw, where incisions through the integument are demanded, they should be made below its lower border. When the bone is fixed, or, rather, before it has been thrown off from its attachments, any operative interference must be condemned. . . . Under these circumstances the surgeon should content himself with seeing that all pent-up pus has free vent, by making free incisions through the gum; that the patient's mouth is kept as clean as possible by frequent washings, and that his general condition is kept up by means of tonic medicines and nutritious diet." With regard to the treatment of cystic disease of the jaws, our author's remarks are equally judicious: "In every case in which the faintest suspicion exists of the cystic nature of the growth, operative interference should be confined to an exploratory operation, before the graver one of the extirpation of the growth is entertained. . . . In each of the cases which have been recorded, it will have been observed that the treatment was very simple, for a free incision into the cyst was made in all; the subsequent cure being effected by the production of inflammation of the cyst-wall by means of plugging its cavity with lint; although in the case of true dentigerous cyst the removal of the tooth through a free opening into the antrum was likewise needed. The opening in all the cases of disease of the upper jaw was made through the wall of the cyst, beneath the cheek, and not by perforating the socket of the first molar tooth after its removal, as is often advised. The opening at this spot can be made more easily, and may be made larger, and is more under observation. It should always be a free one. When the cyst is large, a piece of bone may be taken away, as was done in the instance quoted of dentigerous cyst." Mr. Bryant's paper is illustrated with four lithographic plates, and several wood-cuts.

Art. IX. *On the Torsion of Arteries: a Description of some Models made to Illustrate the Effects of Torsion; with Remarks*, by THOMAS BRYANT.—This short paper is adorned with a beautiful coloured lithographic plate representing several models executed by Mr. Towne, the well-known modeller of Guy's Hospital. They show at a glance, and better than can be done by any verbal description, the *modus operandi* by which torsion acts in effecting the closure of arteries. By the process of torsion the inner coats are divided, and in the majority of cases turned inwards, these incurved coats forming, in the most perfect examples, complete valves, not unlike the semilunar valves of the heart; in other cases "the valvular incurvation of the divided inner coats is not so perfect as to prevent the passage of a small portion of blood or injection with the first rush of fluid, although it is tolerably clear that the valve is subsequently rapidly closed with any increase or continuance of the injecting force. . . . In some cases this valvular incurvation of the inner coats is exchanged for a general splitting of the tissues, hemorrhage being prevented by the clotting of the blood between the irregular laminæ of the divided membrane and the twist of the external cellular coat." These models show the advantages of not twisting off the end of the vessel, for even when "the valve formed by the divided recurved inner coat proves to be perfect after the first rush of the blood current has taken place, the knot formed by the twisted external coat must prove a valuable support, and in doubtful cases, where an imperfect valve exists, it must be of still greater importance." When the inner coats are irregularly broken up, the presence of the twisted external coat is of value, "not only by forming an obstacle to the immediate escape of blood through the broken-up inner membrane, but by giving time to allow of complete coagulation of the blood which has been caught between the laminæ of the inner coats." Mr. Bryant's practical conclusions, from his experience in over one hundred cases, are:—

"That torsion may be safely applied to all arteries of the extremities, and to all those of the trunk which are in size less than or equal to the femoral. To the carotid and iliac vessels it has yet to be applied.

"That it is almost as applicable to diseased as to healthy vessels, the former requiring fewer rotations of the forceps than the latter.

"That in large healthy vessels, such as the femoral, the extremity should be twisted till resistance has been overcome, but no further—three, four, or five

rotations of the forceps being, as a rule, all that is needed. These rotations should be made sharply.

"That in large atheromatous vessels the same rule should be applied, two or three rotations of the forceps generally sufficing.

"That in all small vessels torsion may be applied very freely, even to the separation of the end, although when evidence of disease exists it is better to proceed with more caution and not to twist off.

"That in every case where a large artery is twisted, it is advisable to allow a current of blood to flow into the vessel before the forceps are removed from its end. This caution not only tests the completeness of the act in all cases, but in doubtful ones facilitates the coagulation of the blood in the meshes of the broken-up inner membrane."

Art. XIII. *A New Method of Treating Gonorrhœa by Injections*, by Arthur E. Durham.—If Mr. Durham correctly represents the practice of the venereal wards of Guy's Hospital, we cannot wonder that he considers some improvement necessary in the treatment of gonorrhœa. This disease, he tells us, though simply a local affection, is (in the male) "rarely amenable to purely local treatment. Copaiba, cubebs, oil of sandal-wood, and other medicines, administered internally, are as much in vogue as ever, if not more so." Drugs are administered "which are often very nauseous to the patient, and are notoriously liable to disorder the stomach, and more or less affect the general health. In some cases . . . these drugs cannot be tolerated in any form, and the gonorrhœa almost comes to be considered the lesser evil." Treatment by injections "very often, indeed, utterly fails to do any good beyond amusing the patient until the gonorrhœa has, as it were, worn itself out. . . . in very many instances the prescribed injections have been of little real benefit; . . . in some instances positive mischief has been done; and . . . in comparatively few cases only have good results been manifestly effected." Mr. Durham's "new method" consists in the use of a slender tube of vulcanite, terminated at one extremity by an elongated bulb, and at the other connected by means of an elastic tube with an ordinary hand-ball enema syringe. "At the junction of the slender tube with the commencement of the bulbous expansion is a ring of minute perforations, which are made in such direction, that when the syringe is in action, the fine streams of fluid ejected through them pass backwards and upwards . . . and not straight onwards." The urethral tube is three to three and a half inches long, and of the calibre of a No. 3 or No. 4 catheter, the bulb being olive-shaped, three-eighths of an inch long, and at its largest circumference of the calibre of a No. 7, 8, or 9 catheter. A somewhat similar instrument was devised many years ago by Mr. Hilton; but it seems to us that in cases where it is necessary to resort to deep injections, Dr. Addinell Hewson's ingenious application of Thudichum's douche promises better than any other method. (See *Penna. Hosp. Reports*, vol. ii. p. 255, and No. of this Journal for July, 1869, p. 151.)

Art. XVII. *A Description of the Appearances of the Human Eye in Health and Disease as seen by the Ophthalmoscope. Fourth Series.—Glaucoma*, by C. Bader.—This short paper, like those previously published by Mr. Bader under the same title, is accompanied by beautifully coloured plates, on this occasion two in number, containing nine figures illustrating the ophthalmoscopic appearances in cases of chronic and of acute glaucoma. The following sentences may assist some of our readers in recognizing the condition known as "*cupping*" of the optic disk: "The course of the bloodvessels is altered; those on their way to and from the retina have to pass through the optic disk. The following alterations in their course are characteristic of the cupped condition of the optic disk, and to the less experienced ophthalmoscopist are the only reliable signs of the existence of a cupped optic disk. The greater number of vessels appears displaced towards the side of the cup, which lies nearest the yellow spot. The veins of the retina have to pass round the margin of the cup to reach their point of exit from the disk. If, as in advanced glaucoma, the margin of the cup is very prominent, a portion of the veins is hidden from view by that margin. The veins in the cup appear displaced compared with their corresponding portions in the retina; they do not seem to be the prolongations of the latter. This deceptive

appearance is increased by the veins in the cup appearing much smaller than those in the retina; some can barely be traced in the optic disk, others are lost sight of altogether. Even in the early stages of glaucoma we may see the trunks of the retinal vessels in the middle of the optic disk, instead of advancing straight forwards, to be bent towards the side of the disk nearest the yellow spot."

Art. XIX. *The Results of Amputations of Portions of the Limbs on account of Injuries and Diseases, especially in reference to the Causes of the Mortality after such Operations*, by JOHN BIRKETT.—In this valuable statistical paper are recorded 175 amputations in the continuity of limbs performed upon 171 patients, either by Mr. Birkett himself or under his immediate supervision, the cases having occurred during a period of seventeen years. There were four *double amputations*, three proving fatal, and the fourth (an amputation of the left thigh and arm in the case of a "hardy, healthy, and temperate labourer, twenty years old") eventually terminating in recovery.

Of the 167 cases of single amputations, nearly one-third ended in death, though in a large number of cases the fatal result was directly due to the traumatic lesion for which the operation was performed, the patients being, as Mr. Birkett puts it, "killed" by the effects of the injury. For the convenience of our readers we have compiled the following table, giving the numerical results of Mr. Birkett's 167 cases.

Seat of Amputation.	Primary.			Secondary.			For Disease.			Aggregate.		
	Cured.	Died.	Total.	Cured.	Died.	Total.	Cured.	Died.	Total.	Cured.	Died.	Total.
Thigh	4	5	9	2	8	10	44	10	54	50	23	73
Leg	12	6	18	4	6	10	11	4	15	27	16	43
Arm	7	6	13	5	5	10	2	1	3	14	12	26
Forearm . . .	12	1	13	1	...	1	10	1	11	23	2	25
Total . . .	35	18	53	12	19	31	67	16	83	114	53	167

It will be seen that the figures in this table fully bear out the established doctrine that the gravity of amputation increases directly with the proximity to the trunk of the point of operation, the apparent exception in the case of the leg and thigh being due to the fact that in the latter situation the amputations *for disease* greatly preponderate, these being, of course, the most favourable cases. Another point of interest is the greater mortality after *secondary* than after *primary* amputations for traumatic causes; a fact which has long been recognized in military surgery, but which is not acknowledged as true in civil practice by many writers, among others by no less eminent a surgeon than Mr. Erichsen (*Science and Art of Surgery*, last Am. edit., p. 62). We may add that from a careful tabulation of over 1800 cases, derived from a large number of civil sources, we are convinced that the distinguished Professor of University College is in error as to this matter, and that in civil, as in military surgery, primary is more successful than secondary amputation.

Mr. Birkett discusses in a very satisfactory manner the *causes of death in fatal cases* after amputation, and comes to the following conclusion, which seems to us amply warranted by his premises: "From the above evidence we may conclude that a large proportion of the patients submitted to amputation, when inmates of a metropolitan hospital, are the subjects of more or less advanced chronic disease of the thoracic or abdominal viscera. It is true that the immediate cause of death may be an acute inflammatory attack of a vital organ, to which it is reasonable to suppose diseased persons may be more prone than healthy ones, but the facts show, at the same time, that 'the chances of death after operations appear to depend almost entirely upon the previous state of each patient's constitution,' as stated by Dr. Chevers." (See an able paper by Dr. Norman Chevers on the causes of death after injuries and surgical

operations, published in *Guy's Hospital Reports*, 2d series, vol. i. (1843), pp. 78–102.)

In closing this, the thirtieth volume of Reports issued by the Medical and Surgical Staff of Guy's Hospital, we cannot refrain from again expressing our high appreciation of the unequalled series which it so worthily prolongs. Oldest and best of all the Hospital Reports, the "Guy's" need fear no rival: long may it continue, as it has for more than the third of a century, to send forth from time to time its noble contributions to practical medicine and surgery, an honour to its own country, and a positive boon to the cause of science throughout the whole civilized world. J. A., Jr.

Art. XXII.—*St. George's Hospital Reports.* Edited by John W. Ogle, M.D., F.R.C.P., and Timothy Holmes, F.R.C.S. Vol. IV., 1869. 8vo. pp. viii., 354. London: John Churchill and Sons.

This volume contains twenty-one papers, of which eleven are medical, and for the most part are of unquestionable value and interest. We shall first notice these, and afterwards the articles specially pertaining to surgery.

Of the medical papers the first is:—

Art. I. *On the Variations of the Acidity of the Urine that occur when Vegetable and Mineral Acids are used*, by H. Bence Jones, Esq.—The opening paper of the volume is another of those valuable contributions to the study of physiological chemistry which have rendered its author's name familiar to the medical student. Not long ago Dr. Jones was assured that lemon-juice occasionally made the urine alkaline. Doubting the correctness of this statement he instituted a number of experiments to determine the effect of the vegetable and mineral acids upon the acidity of the urine. In his first series of experiments the acidity of the urine was determined for twenty-four hours before any lemon-juice was taken, and this, like those he before made,[1] and which were subsequently confirmed by Dr. Wm. Roberts, of Manchester, showed the close relation existing between digestion, and the reaction of the urine.[2] In the second and third series of experiments the variations of the acidity of the urine when lemon-juice and dilute sulphuric acid, respectively, were taken, was observed. It was found that the natural variations of the acidity of the urine are so great as almost to hide the effect which even twelve ounces of lemon-juice in the day can produce. The decrease of acidity that occurred when food was taken was just as great on the day the citric acid was taken as it was on the day when none was taken. Hence Dr. Jones concludes "that lemon-juice and tartaric acid have the same action in increasing the acidity of the urine, and that neither of these acids, even when taken in very large doses, produces as much effect on the acidity of the urine as is produced by the action of digestion." The action of digestion so far surpasses the action of large doses of lemon-juice on the urine that if the urine had only been examined four hours after breakfast, its alkalescence might have been attributed to the action of the lemon-juice. The statement that lemon-juice makes the urine alkaline, undoubtedly arose from some observation of this kind.

"When accurate observations are made," the author holds, "it will never be found that lemon-juice, or any other free vegetable or mineral acid, can cause the urine to become alkaline; although, when there is an irritable stomach, the urine may frequently be found to be alkaline during digestion, even when vegetable and mineral acids are taken in large quantities."

Art. II. *A Case of Angina Pectoris, with remarks*, by J. Lockhart Clarke, M.D.—In this case extensive disease of the heart must have existed for some time before the appearance of any striking symptom, and the sudden manner in which these symptoms supervened, on a seemingly healthy condition,

[1] Animal Chemistry (H. Bence Jones), London, 1851, p. 41.

[2] Vide Am. Journ. of Med. Sci., April, 1870, p. 507.

is worthy of remark. The patient's illness apparently lasted but little more than five weeks, and the pain was equally severe on both sides. Neither the symptoms nor the post-mortem appearances differed very remarkably from those which are common in the graver forms of this disease. Immediately beyond, and all along the attachment of the aortic valves, the inner surface of the aorta was raised into a transverse and convex eminence, which had a somewhat rough or uneven surface, and almost entirely obliterated the orifices of the coronary arteries. Under the microscope it was found to consist chiefly of fibrous tissue, without any appearance of atheroma. Post-mortem changes had unfortunately advanced too far to give any value to a minute examination of the nerve structures.

Dr. Clarke briefly notices the hypotheses which have been advanced at various times regarding the essential nature and proximate cause of angina pectoris, and apparently lays particular stress upon the view of Laennec, "that the primary affection is seated sometimes in the pneumogastric nerves, and sometimes in the cardiac portion of the sympathetic, and that the brachial plexus becomes implicated"—a view which has been materially supported by recent investigators (*vide* M. Lancereaux de l'Altération de l'Aorte et du Plexus cardiaque dans l'Angine de Poitrine.—*Gazette Médicale de Paris*, 1864, p. 432.) The latest writers, MM. Eulenberg and Guttmann, in a very learned and valuable paper,[1] conclude from an analysis of cases, and from the experiments of Bezold,[2] "that the abnormal action of the heart in angina pectoris is due to the influence of the sympathetic on the ganglia of the heart; and as all the sympathetic fibres of the heart meet in the cardiac plexus, that this plexus is the medium through which the abnormal action is produced."

Art. III. *Notes on the Subcutaneous Injection of Morphia*, by EDWARD T. WILSON, M. D.—This article is only a *réchauffé* of our knowledge concerning hypodermic medication. The points upon which the author lays particular stress are: 1. That the solvent for the morphia should be distilled water without any admixture of acid. 2. That the initial dose should be much smaller than that usually given. 3. That the injection should be performed slowly.

Art. IV. *On Rheumatic Pericarditis*, by REGINALD E. THOMPSON, M. D.—This paper is founded upon the study of 171 cases of this disease, treated in St. George's Hospital. According to the post-mortem records the whole of the pericardium was diseased in 94 cases, or a little over 71 per cent., and a portion only suffered in 38 cases, or about 29 per cent. Out of 266 cases of acute rheumatism admitted into the hospital, 43 were attacked with pericarditis, or 16 per cent. Women, it appears, are extremely liable to this disease between the ages of 13 and 20. The earliest age at which a case occurred is 9; the oldest, 50. In men the liability extends over a longer period. The average age at which pericarditis occurs was found to be, for a woman, 19; for a man, 25. Far the greater number of cases are attacked before 30.

The cases being tabulated as regards the liability to pericardiac complication in the various attacks, it was found that in first attacks of rheumatism there were 25 cases of pericarditis; in second, 13; in third, 2; in fourth, 1; in sixth, 1. Out of 28 [32?] cases in which the date of its occurrence could be ascertained, it was found that it came on in 10 during the first week, in 16 during the second, and in 6 during the third week. Between the fourth and tenth days it occurred in 19 cases, and the favourite days were the ninth and tenth.

Dr. Thompson is inclined to agree with Dr. Peacock in finding pericarditis, preferring cases of rheumatic fever with slight external evidence of joint-mischief, while endocarditis is chiefly met with in the more severe cases.

The temperature was not found to be influenced to any notable extent by the intercurrence of this complication; and cases of rheumatism without pericarditis have been found to exhibit as high a temperature as cases with pericarditis. Pneumonia, a frequent complication of acute rheumatism, and, especially, of

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[1] Die Pathologie des Sympathicus. Archiv für Psychiatrie und Nervenkrankheiten, 1868–69. 1 Bd. 3 Heft., p. 702.

[2] Untersuchungen aus dem physiologischen Laboratorium in Würzburg, Leipzig, 1867. 2 Heft. ss. 181, 368.

rheumatic pericarditis, has a decided effect in raising the temperature, and is frequently overlooked from the difficulty of making a physical examination in a rheumatic patient.

Regarding valvular disease as a complication of rheumatic pericarditis, the following statistics are given. The valves were found perfectly healthy in 24 cases; mitral and aortic valves diseased in 47; mitral alone in 34; aortic alone in 8; aortic and tricuspid in 2; aortic, mitral, and tricuspid in 1. The average duration of all cases of this form of pericarditis was found to be 15 days.

The treatment of acute rheumatism now generally adopted in St. George's Hospital, is that so ably advocated by Dr. Fuller, and known as the alkaline (vide *Am. Journ. of Med. Scien.*, July, 1869, p. 196); but other methods have also been tried, and the results are stated as follows: "1. During the time that venesection was employed in this hospital for the cure of rheumatic pericarditis, many more cases terminated fatally than now, and in a manner that showed the pernicious effects of the treatment adopted. 2. Of the beneficial influence of mercury in this disease I can find no evidence. * * * On looking over the fatal cases treated by calomel and opium, one cannot but be struck by the frequent record of the pericardium being 'enormously' distended with effused serum. 3. With respect to the alkaline treatment, the first noteworthy observations to be made in the fatal cases are that the symptoms previously alluded to as preceding death are now no longer noted; that the patients do not die with a pericardium 'enormously' distended."

Dr. Thompson has not been able to satisfy himself that alkalies are antidotal to pericarditis, having no clinical notes of cases treated without alkalies with which to compare these statistics. He states, however, that on looking over the clinical cases, he finds "the best results, both in the duration of the pericarditis and of convalescence (a most important point in estimating the effect of treatment), from full doses of potash continued for a short period, followed by bark." Of treatment by continued doses of opium, our author thinks, that though it may tend to produce a condition of ease, it seems not only to prolong effusion but also retards convalescence.

The deductions which are made from the favourable results of these clinical cases are the following: If a case of rheumatism, likely to be attacked with pericarditis is to be treated with alkalies, full doses (say ʒj—ʒiss bicarb. with citric acid) are to be given, even if the amount of joint-mischief appears to be trivial. Should there be much pain on the occurrence of pericarditis, local bleeding may be used [thus affording great relief to the pericardial pain]. When the first stage of inflammation is over and effusion has taken place, then depressing drugs, with the exception of purgatives, should be withheld; personal experience can teach how depressing is the action of large doses of alkalies; tonics may be freely given, and stimulants, if the pulse shows that they are required. If the amount of effusion is considerable, the application of blisters over the heart will be found of use.

We have given a careful analysis of this paper because we consider it a very valuble contribution to medical science; its conclusions are not the results of mere theoretical consideration, but are based on positive evidence, and therefore entitled to the highest confidence.

Art. V. *Cases of Syphilitic Disease of the Nervous System*, by T. Clifford Allbutt, M.D.—In this paper Dr. Allbutt contributes the histories of twelve cases which show, in common with many others, that intense pain in the head, with nausea and dizziness, is very suggestive of syphilis; and this suspicion becomes a very high probability when local palsy of the face or orbit is found to exist. The convulsions in syphilis often occur without loss of consciousness, are frequently only partial, and often preceded by vertigo. Optic mischief, the writer states, is very common; it is generally neuritis or atrophy, except in the disease of vessels, when we see a very slow atrophy, seldom or never passing the second degree. The existence of optic neuritis or atrophy Dr. Allbutt thinks particularly significant. In commenting upon the curious combinations of clinical phenomena to which this disease gives rise, he remarks: "Syphilis seldom picks its way daintily along beaten ways, and seldom makes a quiet nest for itself like another tumour, but blunders carelessly into all and any parts just

as they come. A mass in the hemisphere may give rise to but little apparent palsy, or to no break in the commoner relations of things, until the patient dies suddenly, after a few fits and a coma; on the other hand, a minute tract of inflammation, by snaring a nerve in its run, may cause at once a local palsy of an annoying or an alarming kind. A thin film of surface irritation, again, on the hemispheres may set up epileptic fits, which may be associated with another bit of mischief, strangulating a special-sense nerve, or causing some other distant local palsy, say perhaps in the cord, while the arteries also may be silently thickening and shrivelling, until one is blocked up, and a hemiplegia strikes down a strong young man years before his time." Syphilitic encephalic disease may occur in either sex at any age and interval after infection, and seems to follow any treatment; the only prophylactic and the only remedy, according to the author, being iodide of potassium taken for months and years.

Art. VI. *Clinical Observations on Acute Tubercle*, by EDWARD LONG FOX, M.D.—The author defines in this communication the various forms under which acute tubercle is met, and discusses the diagnosis of acute phthisis from acute bronchitis, acute pneumonia, typhoid fever, and meningitis.

In the diagnosis Dr. Fox relies upon the following elements:—

In acute bronchitis upon the more rapid emaciation, the perspiration, and the temperature of acute tubercle.

In typhoid pneumonia the dulness is more marked and more rigidly defined than in acute phthisis; the crepitation is more accurately connected with the region of dulness or is superseded by bronchial breathing only, the expectoration is more hemorrhagic, and there is absence or diminution of the chlorides up to a certain stage, which does not occur in acute phthisis unless there is concurrent pneumonia. The temperature also varies in the two conditions.

Typhoid fever and acute phthisis may have, in common, rigors, headache, stupor, delirium, subsultus, rapid and weak pulse, gurgling in the right iliac fossa, diarrhœa, cough, bronchial rales, emaciation, dry, brown tongue, sordes on lips, crops of sudamina. The points of difference are: 1. The generally greater dyspnœa in acute phthisis. 2. The absence of eruption (but this may also be absent in typhoid fever, and Dr. Fox has seen an instance in which a rose-rash existed in a case of acute tubercle). 3. The shape of the abdomen, which in acute phthisis is supple and not tense or tub-shaped. 4. Lastly, the temperature, which though high in both diseases, follows a more irregular course in acute phthisis than in typhoid fever.

As regards the temperature as an element of diagnosis, Dr. Fox states that in acute bronchitis it is often not raised beyond the normal standard, and never beyond 102° Fah. In pneumonia it will generally be high at first, and increase up to about the fourth or sixth day, and then fall regularly; the fall not coinciding with the clearing-up of the hepatized portion of lung. In typhoid fever the temperature will be high by the end of the first week, and will keep high for a very indefinite time. When, however, it begins to decline, its diminution is regular. On the other hand, in acute phthisis the temperature is subject to great and sudden variations, even to the extent of six or seven degrees, and bears no regular relation with respirations or pulse.

The diagnosis between simple and tuberculous meningitis must generally depend upon the previous history and constitution, and the evidence of tubercles in the lungs. The thermometer in tuberculous meningitis seldom rises above 102°, and in two of Dr. Fox's cases this temperature was not reached till the tenth day, the evening temperature before this date being only 100°. This will be found a valuable element in the diagnosis of this affection. In cerebro-spinal meningitis the author thinks the temperature is generally higher.

This paper is illustrated by twenty-six cases and diagrams showing pulse and temperature curves.

Art. X. *The Causes of Pulmonary Consumption*, by CHARLES THEODORE WILLIAMS, M.D.—This was originally read as a dissertation for the degree of Doctor of Medicine before the University of Oxford, May, 1869. The principal causes of pulmonary consumption are classed as follows:—

"1. *General causes*, which, by their weakening influence on the constitution *generally*, predispose to consumption: such are hereditary predispositions, want

of pure air and good food, typhus and typhoid fevers, scarlatina, measles, cessation of discharges, termination of pregnancy and lactation, mental depression, and damp.

"2. *Local causes*, the effects of which are limited at first to the lungs, but may at a later date extend to the system. These are: attacks of bronchitis and hooping-cough; attacks of pleurisy and pneumonia; attacks of asthma; trades and occupations giving rise to a dusty or gritty atmosphere; injuries."

These various causes are illustrated by notes of numerons cases.

Art. XI. *Exophthalmic Goitre*, by W. B. CHEADLE, M. D.—This paper contains the clinical history of nine cases of the disease, but, unfortunately its pathology is not elucidated by post-mortem examinations. The author does not think that disease of the cervical sympathetic will account for all the phenomena observed in exophthalmic goitre and suggests the probability of its being dependent, in a great majority of cases, upon uterine irritation. That this is not the ultimate cause, its occurrence in man, however rare it may be, certainly proves. In two very severe cases Dr. C. found great benefit to ensue upon the use of a lotion of tincture of iodine and glycerine kept constantly applied to the thorax and tincture of iodine ♏v., afterwards increased to x, in water three times a day.

Art. XVI. *On Aphasia*, by W. WADHAM, M. D.—In this short but extremely interesting paper Dr. W. records the history of a case of aphasia of the atactic[1] variety (inability of converting thoughts into words) occurring in an ambidextrous boy (the left hand, however, being rather the stronger) subsequent to an attack of left hemiplegia, and continuing complete for three months; then there occurred gradual but imperfect recovery of speech, the apparent result of a patient and laborious process of education. Death occurred from exhaustion twelve months after the paralytic stroke, and there was found nearly total destruction of the island of Reil on the right side. Broca's region, the posterior portion of the third frontal convolution of the left hemisphere, was perfectly healthy.

In this case we are forced to the conclusion that the aphasia resulted as the consequence of the lesion in the right hemisphere and the history of the case gives additional strength to the views of Moxon[2] and Ogle.[3] For the explanation of the case, Dr. W. thinks "it is necessary to consider the brain as a symmetrical organ, probably composed of an assemblage of lesser organs arranged in pairs with similar functions. That under ordinary circumstances, and in the majority of men, the organ of speech in the left hemisphere is educated, but in the right remains dormant; the contrary being the case in men who by preference use their left hand. That in very exceptional cases like the one we are now considering, when individuals are ambidextrous, the organ may be fully educated on one side, and partially so on the other. That in this particular case the organ was fully educated, and the function developed on the right side, and to a less degree on the left; consequently that when destruction of the part in which the fully-developed function was localized took place, the boy became aphasic for a time, but subsequently had the function which was imperfectly developed on the other side sufficiently educated to give him the amount of speech he acquired, and which he did not live sufficiently long to perfect."

Art. XVIII. *Remarks on a Case of Locomotor Ataxy with Hydrarthrosis*, by T. CLIFFORD ALLBUTT, M. D.—This case presented in a marked degree the form of joint mischief lately so elaborately discussed by Prof. Ball, of Paris, in the *Medical Times and Gazette* (1868, Vol. II., and 1869, Vol. II.). The right knee over the patella measured fifteen inches, and it was neither hot nor painful; the other joints were unaffected. The size of the knee was greatly reduced by pressure.

Art. XX. *Annual Report of Medical Cases during the Year* 1868, by REGINALD THOMPSON, M. D., Medical Registrar.—From this, the concluding medical paper of the volume, we learn among other interesting facts, that peroxide of

[1] See Ogle on Aphasia and Agraphia, St. George's Hosp. Rep., 1867, vol. ii. p. 95.
[2] Brit. and For. Med.-Chir. Rev., April, 1866, p. 481. [3] Loc. cit.

hydrogen has had a fair trial in cases of diabetes, and appears to be utterly useless as a remedy for this disease.

We have thus briefly analyzed the eleven medical papers of this volume. The gentlemen of the medical staff (which consists of nine physicians) contribute two of these papers, in all fourteen pages, and the Medical Registrar a third, and his "annual report of the medical cases admitted during the year," and of these four papers three contain the fruits of the hospital experience. This scarcely fulfils the original design of Hospital Reports, which are intended "mainly as a means of registering experience attained within the hospital." We hope that the medical staff of St. George's will hereafter, as they have in the past, furnish to the profession more liberally than they do in the present volume the results of their hospital experience, and that many succeeding volumes will bear witness to their industry and maintain the reputation they have achieved. I. M. H.

We shall next invite the attention of our readers to those papers which appear to be more particularly addressed to *surgeons*, and the first of these which we shall consider is :—

Art. VII. *Contributions to the Surgery of the Head: Sebaceous Tumours of the Cranial Region*, by PRESCOTT HEWETT, Esq., Senior Surgeon to the Hospital. —The great frequency with which these sebaceous cysts are met with in the scalp and adjacent parts renders the subject of their pathology and treatment one of importance, and we have in the present paper a most able and interesting contribution to our knowledge in this department, by the eminent Senior Surgeon of St. George's; than whom no living writer is better known as an authority upon all matters relating to the surgery of the head.

Some of these cysts have an inner surface exactly resembling skin, presenting even hairs and sebaceous glands, just like a true cutaneous structure; these are the "*Kystes dermoïdes sous-cutanés*" of Lebert, or the "cutaneous proliferous cysts" of Paget. They are commonly found in the neighbourhood of the orbit, and very often near the external angular process of the frontal bone; though firm when handled, they are not so when laid open, the cyst itself being rather thin and its contents soft and pultaceous, the hardness of the tumour before incision being thus simply due to its distension. These cysts are frequently congenital, and commonly deeply seated; even in their early stages they are attached to the periosteum, and as they increase in size they produce erosion of the bone, occasionally penetrating the skull and giving rise to convulsions or other forms of cerebral disturbance. The only treatment to be recommended is complete excision, which is easy enough in the case of the sebaceous tumour of the scalp, as here the cyst is usually loosely attached; but when the brow or adjacent parts are affected, careful dissection is often required in order to insure complete removal of the cyst wall, of which any portion that is left may lead to the formation of a sinus which will probably persist and necessitate a second operation.

"But in the great majority of cases the sebaceous tumours about the cranial region differ widely in many respects, from the cysts which have just been described." Thus the cyst wall and the outer layers of its contents may be so closely blended as to be indistinguishable, constituting what is ordinarily called a "thick-walled cyst," a name which Mr. Hewett considers incorrect. These tumours are at first almost completely solid, consisting of concentric layers of flattened epithelial cells; at a subsequent stage the central parts undergo softening, breaking down into a pultaceous mass which occupies the middle of the tumour, and in which a detached portion of the outer horny layer is occasionally found lying loose. In other cases the horn-like material forms septa circumscribing small cavities which contain the sebaceous matter, thus giving the tumour a multilocular appearance on section.

"In less common cases the contents of the cyst are altogether pultaceous; there is no horn-like material; and the cyst itself is thin and fibro-cellular. Or that which was pultaceous may become liquid, a thin fluid with epidermal scales floating in it. Or even these, in rare cases, may have disappeared, and the cyst may be filled with a more or less transparent fluid. If irritated by any cause, or roughly used, such a cyst may have mixed with its fluid more or less blood."

Such tumours, if hard, were considered by Velpeau to be fibrinous clots (the result of contusion) of which the central parts had undergone softening, while the large and fluid accumulations were similarly supposed to be collections of blood which had become encysted. "In some cases, crystals of cholesterine are mixed up with the sebaceous materials of an encysted tumour of the scalp, sometimes in small, sometimes in large quantities. Such crystals abundantly strewed amidst the epidermal scales render an encysted tumour not only quite solid, but give to it, on a section, a peculiar bright, glistening, mother-of-pearl appearance." This variety has been described by Müller as the cholesteatomatous tumour, but Mr. Hewett prefers with Paget to look upon it as essentially the same as the sebaceous tumour. "In very rare cases too the contents of a sebaceous cyst may become altogether cretaceous. The tumour is then perfectly solid, and remarkably hard like a bullet. I have sometimes found the white putty-like pulp in such a cyst of the scalp; but I have met with no case in which the entire mass of such a tumour had been calcified."

Besides the evils which these sebaceous cysts may produce by their mere increase in bulk, they occasionally inflame and suppurate, the bones beneath becoming carious, or a foul cancerous-looking ulcer may result, the patient being eventually worn out by exhaustion and repeated hemorrhages.

Sometimes a number of independent cysts grow closely together, presenting much the appearance of what Mr. Cock and Mr. Birkett have described as "sebaceous follicular tumours."

In concluding this very valuable paper, of which we have been able to give our readers but an imperfect sketch, Mr. Hewett gives some judicious advice as to the precautions to be taken before operating in these cases. The state of the patient's general health should be inquired into, and especially should the condition of the kidneys be ascertained, for albuminuria renders its subjects peculiarly liable to inflammations of a low type. The operation itself may consist of excision, or the skin may be first destroyed by means of caustic potassa or nitric acid, the cyst being readily pulled out after the separation of the eschar. The caustic alkali is particularly recommended by M. Legendre, of Paris, while the acid is the substance employed by the professional "wen-charmers" of the rural districts of England.

Art. VIII. *On Inflammation of the Retina*, by George Cowell, Esq., Assistant Surgeon to the Westminster Hospital, etc.—Mr. Cowell doubts the existence of any form of retinitis deserving the name of idiopathic, and adopts the classification of Professor Stellwag von Carion, into (1) Diffuse neuro-retinitis; (2) Exudative retinitis; (3) Nephritic retinitis; and (4) Pigmentous retinitis. The *causes* of inflammation of the retina he enumerates as 1. Irritation, such as *prolonged* exposure to very bright light, or *prolonged* straining of the accommodation, as in neglected or undiscovered hypermetropia; 2. Wounds of the tunics of the eye; 3. Constitutional syphilis; 4. Prostration from starvation, fevers, pregnancy, etc., with, perhaps, vascular changes from cardiac disease; 5. Bright's disease; 6. Leucocythemia; 7. Diabetes; 8. Embolism of the central artery of the retina; 9. Retinal extravasations; 10. Entozoa; 11. Intra-ocular growths; 12. Choroiditis, irido-choroiditis, or irido-cyclitis; 13. Posterior scleral staphyloma; 14. Optic neuritis; 15. Meningitis; and 16. Orbital growths or inflammations.

The usual symptoms of retinitis are mistiness of vision, with diminution of the visual field, pain of a subdued character in the eye and over the brow, without any photophobia (unless from coexistence of retinal hyperæsthesia), and without any conjunctival injection or change in the external appearance of the eye. "Ophthalmoscopically we find a greater or less degree of grayish opacity of the implicated portions of the retina, which conceals the epithelium and vessels of the choroid, with a tortuous and turgid condition of the retinal veins, well seen in the smaller branches. Except when the inflammation is confined to the peripheral portions of the retina, the margins of the optic disk and choroidal aperture are indistinct or invisible, and very often there are small blood extravasations along the course of the vessels. There is hyperæmia of the optic disk, and sometimes it is swollen and opaque. The vitreous is cloudy,

varying from a *slight* haziness to a degree of opacity obscuring all the details of the fundus of the eye"

The inflammation begins in the connective tissue framework of the retina, implicating the vessels at an early period, and causing fatty degeneration of their walls; the nervous elements are usually last attacked, but when involved never recover. The inflammation often spreads to the choroid, especially in the exudative form. The hemorrhages and exudations vary in appearance and shape according to their position: "if large and rounded, they will be situated amongst the connective tissue of the granular layers of the retina; if small and striated, amongst the nerve layers; and if large and irregular, on the surface of the retina." These points are of importance with reference to the prognosis in any individual case.

Diffuse neuro-retinitis (which is the most common variety of the affection) is usually dependent upon constitutional syphilis; it may accompany or follow iritis, but generally occurs alone. It is marked by a central cloudiness of varying intensity, with a dilated and tortuous condition of the veins, often attended with extravasation. "Micropsia—a seeing of objects diminished in size—is frequently present."

Exudative retinitis is characterized by the appearance of yellowish or whitish-gray patches. "The mistiness of vision may be only partial, and the diminution of the visual field will correspond with the position of the patches of exudation; but the patches are generally situated more or less in the vicinity of the yellow spot, and thus considerably implicate central vision." This variety is much more intractable than the diffuse neuro-retinitis, the retinal and choroidal changes produced by the presence of the exudation precluding recovery in those tissues, and atrophy being the common result.

Nephritic retinitis is generally met with in the advanced stages of kidney disease. The retina becomes at an early period infiltrated with serum, hemorrhages occur, and "as the disease progresses, white spots of exudation form around the central portion of the fundus of the eye; these gradually increase in size, fresh ones appear, and all soon coalesce, surrounding the optic disk with whitish exudation, which has been described as forming a mound around it. . . . . Around the macula lutea are numerous angular whitish or yellowish white exudations, first described by Liebreich as arranged in a radiating form, and peculiarly characteristic of this form of retinitis." Vision is much affected in nephritic retinitis, the subsequent improvement being not proportionate to the curability or amelioration of the kidney disorder, but depending on the amount of damage to the nerve fibres.

"*Retinitis pigmentosa* is characterized by pigment spots in the retina, which assume the form of bifid streaks, stars, or 'bone corpuscles.'" The chief symptoms are night blindness and progressive diminution of the field of vision. The disease begins in childhood, is often hereditary and associated with deaf-mutism and deficiency of intellect. The intermarriage of blood relations is supposed to be a predisposing cause of its occurrence in the offspring. Both eyes are usually affected, and the disease (which is incurable) gradually leads to total blindness, which termination may not, however, occur until old age has been reached.

Mr. Cowell's interesting paper embraces the record of twenty-six cases which are given in detail, and subsequently tabulated for convenient reference.

Art. IX. *On Chronic Bone- and Joint-Disease*, by J. WARRINGTON HAWARD, Esq.—This is a paper of some interest as tending to confirm the view which has now many advocates among pathologists, that chronic affections of the bones and joints have often a local rather than a constitutional origin.

Of 134 cases of chronic bone- and joint-disease of which Mr. Haward took notes in the Hospital for Sick Children, "in only nine was there any sign of tuberculosis; and but seventeen displayed other signs of scrofula; in twenty-four some member of the family was said to have died, or to be suffering from phthisis, but the child itself presented no sign of the disease; in twenty-two only could any history of injury be elicited." The figures, with regard to phthisis, Mr. Howard believes to be too large, and those representing the proportion of antecedent injuries too small, for the reason that the poor are apt to

designate all obscure chest affections as consumption, and, on the other hand, frequently forget or conceal the occurrence of injuries which may have been caused by their own violence or neglect.

As the converse of the above statistics, "of 85 consecutive cases admitted . . . for various tubercular affections, in only 1 was there any bone- or joint-disease," while of 146 cases in which an autopsy showed the existence of tubercle, "in only 8 was there any bone- or joint-disease found: viz., of spine, 1 case; of hip, 3 cases; of spine and hip, 1 case; of knee, 2 cases; of tibia, 1 case." Similar results are derived from an examination of the records of St. George's Hospital, as shown in previous volumes of the *Reports*.

Art. XII. *Clinical Notes on Unusual Surgical Cases*, by H. Lee, Esq., Surgeon to the Hospital.—Six cases of much intrinsic interest are narrated in this short paper, viz., (1) ossific union of fractured thigh in a man aged 98; (2) almost complete loss of the tongue from syphilitic ulceration in a young married woman, recovery following the use of calomel baths; (3) sudden, but fortunately only temporary disappearance of a testicle along the track of an inguinal hernia; (4) a remarkable case of quasi-hysterical joint-disease, to which we shall presently refer; (5) a curious case of embolism closely simulating syphilis, and (6) a case of double vision with either eye. The fourth case is one of very great interest. A young girl of 16 fell and struck her arm in July, 1863; an abscess subsequently formed in the forearm, and at a later period she presented the appearances of a patient suffering from hysterical disease of the elbow-joint. In November, 1864, fibrous anchylosis had occurred, and the adhesions were forcibly ruptured under chloroform. An abscess formed in connection with the joint, which was excised in June, 1866. Symptoms of chronic blood poisoning setting in, with extreme pain, the arm was amputated in January, 1867. The stump healed well, but became exceedingly sensitive and painful. On February 6th, 1868, the median and ulnar nerves were dissected out, and the pain recurring, on August 24th, all the nerves, including the musculo-spiral, were divided close to the armpit. Finally, on April 8th, 1869, the remaining portion of the humerus was removed from the stump, making a modified shoulder-joint amputation, and this time the patient appears to have been definitively relieved, after having submitted to eleven operations of greater or less severity. Mr. Lee's remarks upon the maintenance and localization of hysterical symptoms by the presence of real disease, are eminently practical and judicious. This remarkable case may be compared with that placed on record by Dr. Nott in his interesting "Contributions to Bone and Nerve Surgery," pp. 91–95.

Art. XIII. *Reminiscences of Cases from Private Practice*, by J. Nicholls, M.D., Chelmsford.—This paper, which is necessarily of a somewhat desultory character, contains a record of 21 cases, of which our limited space will permit us to give but the titles: these are, 1. Punctured wound of the external iliac artery, followed by aneurism; cured by pressure. 2. Compound comminuted fracture of the humerus; exfoliation of bone and perfect recovery after two years. 3. Ununited fracture of humerus; death. 4. Rupture of the urinary bladder; death. 5. Double strangulated crural hernia in a male; operation; death; post-mortem. 6. Inguinal hernia; strangulation; operation; no action of bowels for twenty-five days. 7. Fractured skull; ruptured meningeal artery, etc.; death and post-mortem. 8. Extraction of gall-stones through the abdominal wall; recovery. 9. Abscess of liver, opening into pleura; paracentesis thoracis; recovery. 10. Idiopathic tetanus, caused probably by eating underdone pork; recovery. 11. Hemorrhage from internal carotid artery, following scarlet fever; death. 12. Premature birth; short period of gestation. 13. Bronchocele; sudden death. 14. Large calculus in kidney; calculi in prostate; abscess; death. 15. Repeated arm-presentations; death probably from ruptured uterus. 16. Malformation; maternal influences. 17. Spina bifida; tapping; injection; recovery. 18. Hæmaturia; death. 19. Death after swallowing a half-penny. 20. Obstinate skin-disease following arsenical poisoning, and 21. Malignant disease of pericardium simulating aortic aneurism.

Art. XIV. *Two Cases of Excision of the Scapula; with Remarks*, by George Pollock, Esq., Surgeon to the Hospital.—Mr. Pollock's first case was one of malignant disease of the right scapula occurring in a girl of 16; the operation

consisted in the removal of the entire bone, with the exception of the acromion and coracoid processes, and the wound healed readily, the patient remaining well for over six months, when the disease returned and proved fatal; the autopsy showing, however, that the portions of the scapula which had been left had remained healthy. The second case was one of very large tumour involving the right scapula of a man aged 47, and upon this occasion Mr. Pollock removed the whole of the bone with a portion of the posterior edge of the clavicle which was somewhat eroded. The patient had before the operation suffered from chronic bronchitis, which was apparently aggravated by the inhalation of chloroform, and death ensued as the result of this complication on the sixth day after the operation.

We perceive with regret that Mr. Pollock seems unacquainted with the exhaustive researches and statistical tables of Dr. Stephen Rogers, of New York, originally published in the number of this Journal for October, 1868 (pp. 359–380), and since copied by Dr. Watson in the *Edinburgh Medical Journal*, and reproduced in the *Archives Générales de Médecine;* as had our author met with the tables in question, his historical references would doubtless be more accurate than they now are: thus he would not have attributed the first entire excision of the scapula to Mr. Syme, but to Langenbeck, whose operation as shown by Dr. Rogers, preceded that of the eminent Scotch surgeon by several months.

The most valuable portion of Mr. Pollock's paper, apart from the record of his cases, which are both of very great interest, is that which considers the best mode of operation and the precautions to be adopted before undertaking this rather formidable procedure. After making the incisions recommended by Mr. Syme—"viz., one across the upper surface, and another midway from this to the lower angle of the bone or edge of tumour," our author urges the preferability of liberating first the posterior border of the mass, then the inferior, and then turning up the bone from below upwards. By this means a finger can be passed under the subscapular artery before it is divided, and the risk of hemorrhage from this source obviated. This plan was adopted by Mr. Pollock in both of his cases, before he was aware that the same method was advised by Sir Wm. Fergusson. "Previous to any attempt to liberate the scapula from any of its attachments, the subclavian artery should be compressed, and the compression should be continued until the operation is completed and the chief vessels tied." This compression may, if necessary, be much facilitated by means of a preliminary incision above the clavicle, the finger of an assistant being placed in the wound directly upon the vessel.

Mr. Pollock concludes his interesting paper with the following remarks, which appear to us so eminently judicious that we quote them in full for our readers' benefit: "In making incisions for the removal of a very large tumour here or elsewhere, the surgeon may economize blood by taking the following precautions: in the first place the incisions should not be longer than he requires for the time. For instance, if a tumour cannot be removed unless large flaps of skin are made, no longer incisions should be made than are requisite for the dissection of each flap in its turn. If a long incision be made, it will be bleeding at its lower extremity while the surgeon is separating some of the integuments at the upper part, and thus unnecessary loss of blood takes place. Again, more skin than requisite should not be saved for the flaps in the removal of the scapula. If that which is not required is left attached to the tumour, time is saved by not having to dissect it off; and so much blood is saved as would be lost in separating it from the growth to which it is attached. Lastly, *the tumour itself should not be cut into*—the incisions should only be skin deep. If the tumour be cut into at the same time that the incisions are made, a great gush of blood may occur; the tumour may be exceedingly vascular, its vessels will be diseased, and will not readily contract, and a free incision into it may give rise to most formidable hemorrhage; whereas outside the tumour the vessels will be healthy, and comparatively few may require to be secured when the removal of the bone has been completed."

Mr. Pollock's paper is accompanied with three excellent wood-cuts.

Art. XV. *Note on Excision of the Ankle-joint*, by T. HOLMES, Esq., Surgeon

to the Hospital.—In this short but valuable paper, Mr. Holmes narrates the case of a lad of 18, upon whom he performed excision of the ankle-joint, removing the articulating extremities of the tibia and fibula, with the whole astragalus. The operation was done by two lateral incisions, behind either malleolus, care being taken not to wound any of the tendons. The astragalus was separated from its attachments to the scaphoid and calcaneum, and then twisted out with the lion forceps. The patient was discharged in less than four months with the wounds healed and the opening of an abscess which had formed in the calf of the leg very nearly so: "He could walk well with a stick, the toes moved freely, and there was some little passive motion at the seat of operation." Two points to which Mr. Holmes directs special attention, are (1) the superiority of the result which follows excision, in a suitable case, over that of either Pirogoff's or Syme's amputation, and (2) the propriety of removing the *whole* astragalus instead of merely its articulating surface. "I believe," he says in conclusion, "that if the operation of excising the ankle were more limited to healthy subjects, in whom the disease is probably traumatic, and if the astragalus were removed entire, the operation would be a far more successful one."

Art. XVII. *On the Treatment of Acute Orchitis*, by J. Rouse, Esq., Assistant Surgeon to the Hospital.—Mr. Rouse reprobates in strong terms the routine treatment ordinarily recommended in cases of swelled testicle, viz., by bloodletting, nauseants, and cathartics, as well as Fricke's mode of treatment by strapping; in our author's condemnation of these plans we cordially agree, for we believe them to be quite unnecessary and very distressing to the patient. Mr. Rouse is in error in supposing that "it was reserved for Mr. Henry Smith to recommend a very startling method of cure," viz., by puncturing the inflamed organ. This is in fact a mere revival of the plan long since adopted by Vidal (de Cassis), though to Mr. Smith (who hit upon it by accident and independently) is justly due the credit of making the plan widely known in England and in this country. Mr. Rouse's own method consists in administering a purgative draught, giving a grain of opium night and morning, and keeping the testicle "enveloped in a hot fomentation of Goulard and laudanum," prescribing "twenty drops of the acid tincture of steel three times a day" after the subsidence of the acute symptoms. Two cases are given in illustration of the efficacy of this mode of treatment, from which it appears that the pain is relieved by two grains of opium, the tenderness disappears about the third day, and the swelling vanishes by the end of a week, the patient then being considered as cured. Although we can scarcely regard it as news to be told that opium in large doses has the power of relieving pain, yet this plan is so simple that it is certainly worthy of a trial; if found to be satisfactory, it will show (like the mint-water treatment of rheumatism) how little we really know of the *natural history* of a disease with which we think ourselves perfectly familiar.

We may add that we have ourselves used Vidal's plan in a number of cases, and have been well satisfied with the results; the pain is *almost instantly* relieved by the puncture, the tenderness and swelling rapidly disappear, and the duration of the disease is we believe shortened, on an average, by about one-third. We do not always feel safe in pronouncing our patients cured merely because the organ is no longer swollen, for there not unfrequently remains for some time an induration and lurking tenderness about the epididymis, which if neglected may give rise to further trouble.

Art. XIX. *Report of the Curator of the Pathological Museum*, by T. P. Pick, Esq., Assistant Surgeon to the Hospital.—This is a very valuable paper, giving in twenty-three pages of small type the most interesting *post-mortem* observations of the year. Among many important cases we can note only a few: a patient fell from a scaffold twenty feet, and was admitted with complete paralysis, both sensory and motor of all the limbs and of the thoracic muscles. No vertebral displacement could be detected, and the motions of the head were unimpaired. Death occurred in forty-eight hours, and at the autopsy "the bones of the spine were found to be perfectly natural and uninjured. Upon making a section of the cord, an extravasation of blood, about the size of a hazel-nut, was found in the central matter opposite the fifth and upper part of the sixth

spinal nerves; there was some amount of yellow softening around the extravasation, and the whole cord was softer than natural."

Eighteen cases of pyæmia were examined, the lungs being the seat of patches characteristic of disease in seventeen; the exceptional case in which the lungs were not so affected is described as one of "spontaneous pyæmia," though its history strikes us as rather unsatisfactory. The patient died after one day's residence in hospital, having been ill for six weeks before admission with cough, dorsal and lumbar pains, rigors and swelling of the lower extremities. The autopsy showed the lungs to be congested, and the bronchial tubes full of mucopurulent fluid. "The liver and spleen contained pyæmic abscesses." The kidneys were "coarse and congested," the alimentary canal being apparently healthy.

There are many other matters of interest referred to in Mr. Pick's paper, which may be profitably read by all students of morbid anatomy.

Art. XXI. *Annual Report of Surgical Cases during the year* 1868, by W. LEIGH, Esq., Surgical Registrar.—This, like the last, is a paper to be studied rather than analyzed. Among the most interesting cases we observe one of successful removal of a large nasal polypus by Langenbeck's operation, *i. e.*, temporarily turning back the nasal bone. The polypus, which was of the gelatinous variety, sprang from the basilar process, and had penetrated the orbit through the lachrymal bone which had undergone absorption. A fatal case of gastrotomy for intestinal obstruction by a fibrous band, is recorded, the gut giving way under manipulation, and being too much softened to allow the formation of an artificial anus. Death ensued in three hours, the autopsy showing recent peritonitis and fecal extravasation. Mr. Leigh's excellent paper contains the customary tables of compound fractures, operations, admissions, deaths, etc.

A tolerably complete index (which was wanting in the previous volumes) adds materially to the usefulness of this. The fourth volume of St. George's Hospital Reports fully sustains, we think, the well-earned reputation of its predecessors. J. A., Jr.

ART. XXIII.—*Transactions of American State Medical Societies.*

1. *Transactions of the Medical Society of the State of New York for the year* 1869. 8vo. pp. 363.
2. *Medical Communications, with the Proceedings of the Twenty-Seventh Annual Convention of the Connecticut Medical Society, held at Hartford, May,* 1869. 8vo. pp. 208.
3. *Transactions of the Medical Association of the State of Missouri, from its inauguration, Dec.,* 1867, *to the annual meeting, April,* 1869. 8vo. pp. 198.

1. THE sixty-second annual session of the *State Medical Society of New York* was opened by an address from the President, Dr. J. V. P. QUACKENBUSH, of Albany, the subject of which is "Individual Effort and Individual Obligation," in reference to the development of medical science in all its branches, and in extending and rendering more effective the means for the prevention and the arrest of disease. The subject is handled with ability and eloquence, and the remarks relative to the study and practice of specialties are marked by good sense. In view of the present extent of the field occupied by medicine as a science and an art, it must be evident that it is one too vast to be successfully cultivated by any single labourer. It is proper, therefore, that each should direct his efforts to that portion of the work which he finds most congenial, "et in hac se exerceat."

The first of the scientific papers—"A Practical Treatise on Acupressure," is a "prize essay," by Dr. JOSEPH C. HUTCHISON. This, so far as it goes, is most interesting and instructive. In it are passed in review the principal methods of applying acupressure, illustrated by experiments on the lower ani-

mals, and observations on the arteries of man—the pathology of the subject—together with a synopsis of cases.

The treatise concludes as follows:—

"Considering that the entire reliability of acupressure for the arrest of surgical hemorrhage has been fully proven, let us inquire if it has any advantages over the ligature.

"1. Secondary hemorrhage is not so liable to occur with acupressure as with the ligature. There are certain constitutional states, such as the scrofulous diathesis, and other morbid conditions, marked by an aplastic state of the blood, which predispose to secondary hemorrhage. But this accident takes place far more frequently as the result of local causes, (1) from too rapid ulceration, or (2) too extensive sloughing of the vessel at the time of the ligature's separation. On the other hand, where acupressure has been employed, the internal surfaces of the artery have merely been placed in contact, no ulceration or sloughing ensues. Again it is often possible to compress several vessels with a single needle, hence secondary hemorrhage would be less likely to occur than if a ligature had been applied to each vessel separately.

"2. Acupressure, as was predicted by Simpson, has proven to be the most expeditious way of restraining hemorrhage; and, with a little experience in its practice, the easiest which has yet been devised, and the surgeon requires no assistant, as in using the ligature.

"3. Acupressure may sometimes be employed where it would be difficult or impossible to seize the vessels with the forceps, and draw them out of their sheaths, so as to allow the application of a ligature.

"4. Not only can two or more arteries be closed by a single needle, but the venous hemorrhage may be controlled at the same time with the arterial; thus preventing, it may be, the absorption by the open mouths of the veins, of noxious fluids from the surface of the wound.

"5. The needle can be removed in a few hours, or in two or three days, leaving the interior of the wound free from all foreign bodies, while the ligature is separated by a slow process of ulceration and sloughing, with the accompanying suppuration: and hence the primary union of wounds must be greatly diminished when the ligature is employed.

"6. Acupressure can be practised with safety upon arteries which are so much diseased that they are too brittle and friable to bear the strain of a ligature. In cases of aneurism, where the artery is diseased for some distance above the sac, the vessel may be closed by an acupressure needle, at a point where it would be inexpedient to apply a ligature."

The paper is illustrated by twenty-one wood-cuts.

A curious case is related by Dr. Alden March of what he terms "Spontaneous Lithotomy." The patient, who had for some years suffered from urinary calculi, felt a sudden pressure upon the rectum, with a sharp sense of something giving way there, followed by a free discharge of urine per anum, which discharge continued up to, and for some time after, the removal of the stone. Early in September, 1868, inflammation of the perineum, with swelling of the scrotum, took place. In four or five days ulceration at the left side of the perineum set in, and increased rapidly. Soon after the patient discovered a hard foreign body, within and projecting from the ulcerated opening just below the left groin. The foreign body protruded more and more; at length the patient seized it with his fingers, and, by a tractive and wriggling movement, extracted what proved to be a large urinary calculus.

About a week after this Dr. M. upon examination detected a fistulous opening a little above the usual place of the incision in the lateral operation for lithotomy, sufficiently large to admit a man's thumb. The patient exhibited great emaciation and debility, with a sad and wrinkled visage, and all the indications of severe and long-continued suffering.

Soon after the removal of the calculus the patient felt comparatively comfortable, and in a great degree free from pain. Enjoying the comforts of a well-regulated hospital, and under a judicious tonic, alterative, depurative and narcotic course of treatment, pure air, and nourishing, easily-digested diet, he rapidly improved. The fistulous ulcer was treated with nitrate of silver, sul-

phate of copper, and the muriated tincture of iron. When the patient left the hospital, November 22d, 1868, the fistula was reduced to the size of the small end of a pocket grooved staff. After leaving the hospital he was without professional attendance, and the ulcer, February, 1869, has somewhat increased in size.

It was several weeks before the urine began to pass through the urethra; still only a portion finds its exit by the natural channel.

The next article is the report of the Committee "On the Result of Consanguineous Marriages," by Dr. R. NEWMAN, which is marked by all due caution, considering the small amount of reliable facts bearing upon the question which are available for drawing positive conclusions.

Next is the report of a Committee on "Propositions on Sloughing and its Consequences." To understand the somewhat obscure title of this report, it is necessary to refer to the fact that a surgeon was unjustly convicted of malpractice, and mulcted in damages to the amount of $500, because, that thirty days after the bandages had been removed from the limb of a lad who had been treated for fracture of the femur, sloughing of the leg took place, commencing at the calf. The surgeon thus convicted petitioned the New York Society for an examination of the facts connected with the management of the said case, and an opinion as to whether the gangrene which occurred in the limb of the patient was attributable to his mismanagement of the fracture. Before us is the report of the committee to whom was referred the petition. The report denies that the sloughing in the case in question was the result of mismanagement, and affirms certain propositions as the basis of their conclusions.

The report of the Committee on "Pharmacology," by its chairman, Dr. E. R. SQUIBB, presents nothing of especial interest, though his hints in reference to the manner in which the work of the convention for the revision of the Pharmacopœia, at its decennial session of 1870, could be effectually promoted are pertinent and sound.

Dr. HARVEY JEWETT presented a paper in recommendation of the powers of "Apocynum Cannabinum" as an active diuretic "in dropsical affections."

Dr. H. believes that practitioners have been led into error and a false estimate as to the diuretic action of the vegetable in question, by employing in its stead the *apocynum androsæmifolium*, which strikingly resembles it in most respects, but is much more active as an emetic and cathartic. It is sold in the shops as "*wandering milk-weed*," or "*American ipecac*."

A very interesting "case of excision of the head of the femur in the latter stages of morbus coxarius" is related by Dr. W. G. WHEELER, delegate from the *Massachusetts State Medical Society*. The propriety of this operation in cases of hip disease, in which the local affection has not been arrested in its early stage, is being every year more fully recognized.

The next paper is on "Vesico-vaginal Fistule, and its successful Treatment by the Button Suture," by Dr. N. BOZEMAN, which comprises the histories of five successive cases of vesico-vaginal fistule, successfully treated by the button suture, during a period of seven months.

Dr. HUN presents a very full account of the present state of our knowledge in respect to the "Trichina Spiralis," its natural history, its source, the effects produced by it when introduced into the human body, and the means for preventing the infection being communicated to the muscles of man, and, when these means fail, the proper remedies for the cure of the morbid symptoms which result from its presence.

A paper on "Glaucoma" is contributed by Dr. H. D. NOYES. The object of this communication is to show that the affection of the eye of which it treats is capable of recognition in its early stage, that its diagnosis is not then so obscure as to be beyond the capacity of the profession generally, and that in its early or acute stage it may be arrested by the operation of iridectomy—an operation of doubtful propriety at a later period of the disease—when perception of light is gone, and the tissues of the organ have become entirely degenerated.

Dr. HENRY S. WEST presents an interesting account of his "Medical and Surgical Experience in Asia Minor."

The next paper relates a case of "Ovarian Dropsy of two years' Duration,"

in which rapid recovery occurred after the operation of ovariotomy, performed by Dr. J. G. Orton, in a married lady aged 32 years, who had never borne any children.

Dr. J. W. S. Gouley presents an account of "External Perineal Urethrotomy," that is, an improved method of external division of the Urethra in Perinæo, for the relief of obstinate stricture, with remarks on the preparatory and after-treatment. The operation suggested by Dr. G. is no doubt well adapted to afford prompt and permanent relief in cases of stricture which too often resist all the means in common use. The paper before us is well worth a careful study.

Dr. W. Manlius Smith, one of the Committee on Pharmacology, treats of "Conium Maculatum;" pointing out some of the causes to which defects in quality of many of the preparations of the article are due, and suggestions in regard to certain morbid conditions of the system in which the use of a trustworthy preparation of conium would prove beneficial.

Next follows an instructive paper on "Placenta Prævia," by Dr. C. C. F. Gay.

"The Chart showing the Influence of Impure Air and Overcrowding on the Health of the various Wards in the city of New York," prepared by Dr. W. Faulds Thoms, is interesting, not merely to the people of New York city, by pointing out to them the portions of their metropolis at which sanitary reform is most imperatively demanded, but to the pathologist also, as furnishing him with facts which throw light upon the cause of endemics, especially those confined to strictly limited and often circumscribed localities. To the etiology of certain forms of disease, charts like the one prepared by Dr. T. are adapted to afford much light.

Next in order is a series of "Obstetrical Statistics," from forty-seven years' practice of the late Dr. T. W. Blatchford, communicated by R. H. Ward, M.D. These statistics are interesting, and valuable as a contribution towards a more extended series. The same remarks may be made in reference to the "Obstetrical Statistics," communicated by Dr. H. S. Chubbuck, which are inserted in the latter part of the volume.

Dr. H. S. Crandall relates the history of a case of an anomalous disease of the skin of the lower extremities, which he names "purpura or something analogous to it."

2. The subject of the annual address delivered at the opening of the Convention of the *Connecticut Medical Society*, by the President, Dr. S. B. Beresford, is "Practical Observations on the Abuse of Tobacco, and its Consequences on Health," which is discussed with great candour. While Dr. B. admits that a very moderate use of the cigar or pipe, under certain wise precautions, may be attended with no bad effects immediate or remote, yet it not being absolutely necessary to the maintenance of man's health or the promotion of his happiness, and its moderate use being liable to lead to its excessive use, the doctor arrives at the very reasonable conclusion, namely, the best and safest course is to relinquish its use in toto.

The communication of Dr. L. H. Wood on "The Influences of Mental Activity upon the Excretion of Phosphoric Acid by the Kidneys," was noticed in the No. of this Journal for April, 1870.

The communication from C. M. Carleton on "The Use and Abuse of Spectacles," is in every point of view most interesting. In its practical bearings it is all important. To do full justice to the author would be impossible by attempting an analysis of his communication, within the limits to which we are necessarily restricted, while, without the diagrams by which the teachings of Dr. C. are illustrated, any analysis of the communication would convey no very clear views of its teachings.

The communication of Dr. F. L. Dibble on "Hydrophobia," presents to our mind one of the clearest, the best authenticated, and the most conclusive series of facts in evidence of hydrophobia as a specific disease, its spontaneous occurrence in certain animals, chiefly of the canine species, and by the bite of these being capable of communication to other of the brute animals, and even to man.

than we ever recollect to have met with. The paper will admit of no useful analysis.

"Notes on the Use of Veratrum Viride," and "Notes on Subcutaneous Injection of Morphia, Atropia, and Strychnia." Both these communications are from Dr. G. A. WARD. The first is to call attention to the value of veratrum viride as a remedial agent, by the relation of a series of cases—two of abdominal wounds, to evince its power to prevent or control peritonitis, one of acute meningitis, and two of pleuritis to show its prompt and beneficial action.

The second communication of Dr. W. presents the history of cases illustrative of the results of subcutaneous injections of various narcotic agents in a wide range of cases.

Dr. S. G. HUBBARD reports a "Case of Supra-Renal Melasma or Addison's Disease," which is instructive, but it hardly bears out the accuracy of Dr. Addison's pathology of the bronzed skin disease, inasmuch as the indications of disease of the supra-renal capsule (there was but one), was trifling to those of the kidney which was in a state of complete disorganization. The case of Dr. H. is certainly remarkable for the long duration of the renal disease (full three years), and it apparently might have continued for years longer, but for the occurrence of embolism in the right ventricle of the heart.

The paper on "Vital Force," by Dr. M. C. WHITE, is full of truisms, establishing the fact that there is in all living organisms a vital force, but how generated, and why its controlling influence ceases to act within such limited periods in individual organisms, Dr. W. throws not a ray of additional light.

Attention is called by Dr. S. G. RISLEY to the poisonous ingredients (soluble compounds of arsenic, copper, lead, etc.) which enter into the composition of the lower-priced water colours, made into square cakes and put up in small boxes, sometimes sold under the name of "toy paints," and the danger incurred by those who use these "water colours," especially to such as wet them for use with the tongue.

A "Case of Pseudo-Cyesis, or Spurious Pregnancy," is related by Dr. I. G. PORTER. The case is a curious, and to a certain extent, an instructive one. Such cases are comparatively unfrequent; they may deceive the young practitioner, but to the older and more experienced the absence of placental souffle and of the sounds of the fœtal heart, will prove at least that they are not cases of pregnancy.

The Medical Communications are followed by "A Memoir of Dr. GEORGE E. PALMER, of Stonington, by Dr. ISAAC G. PORTER. Dr. Palmer died May 8, 1868, aged 65 years.

3. The Transactions of the *Medical Association of Missouri* comprises a series of papers highly creditable to their respective authors. Whether they are all of them precisely of that class of communications which our State Medical Societies were expected to elicit and present to the medical profession of our country at large—personal observations on all the branches of medical science and practice, either in confirmation or contraversion of generally received opinions and therapeutic plans, is a question we shall not stop, on the present occasion, to discuss.

The address on "Fœticide, or Criminal Abortion," by Dr. M. A. PALLEN, expresses, in bold language, the sentiments which every high-minded, well-informed physician must necessarily entertain in respect to a species of murder, which does not stop at the extinguishment of the life of its immediate victim, but is liable to cause severe physical suffering to her who commits to the hands of the butcher the fruit of her womb, and to impair her comfort and usefulness throughout the remainder of her days.

A very interesting communication from Dr. A. HAMMER gives the "Statistics of fifty-one successive Capital Amputations."

Dr. W. B. OUTTEN discusses the all important question of the "Causes and Relationship of some Hereditary Diseases." The subject is treated with very little profoundness. We feel no disposition to call in question any of the views advanced by Dr. O.; but we think that he has not sufficiently elaborated the question he made choice of for inquiry, especially that portion of it which

pertains to the relations of hereditary diseases—a subject, the complete investigation of which is calculated, we suspect, to throw light on more than one important etiological question.

The "Advancement of Knowledge of Diseases of Females during the last quarter of a Century," is the subject of a communication from Dr. G. M. B. MAUGHS. It contains nothing new, and as the entire paper is comprised in seventeen octavo, wide-margined pages, printed in large type, it must be evident that the writer has not been able to say much in relation to the tolerably long list of subjects, many of vast importance, in respect to almost everything relating to many of which there exists much difference of opinion among our most distinguished practitioners, and which it would seem he was necessarily called upon to pass in review in the proper accomplishment of the task he had assigned himself.

Of the description of an "Improved Hodgen Splint for treating Simple and Compound Fractures of the Femur," by Dr. E. A. CLARK, together with the two succeeding ones, "Fractures of the Olecranon," and "A Suspension Splint for treating Simple and Compound Fractures of the Leg," both by the same author, we can only give the titles. A verbal description, unaccompanied with the illustrative wood-cuts would scarcely convey any clear idea of the construction of the several apparatus, or of its adaptedness to effect the object for which it was designed.

Dr. JOHN GREEN recommends the "Treatment of Lachrymal Obstructions by Dilatation of the Natural Passages" by means of Leaden Styles. Dr. G. prefers lead as the material for the dilating styles in cases of lachrymal obstruction to silver, the material usually employed, because he conceives that a leaden style of the same or even larger size can be passed with greater ease, as it adapts itself readily to the curvature of the passage, while it causes comparatively little pain by its continued presence, and hence the smaller size can be more rapidly changed for larger. The difficulty of manipulating the very flexible lead wire, especially the smaller sizes, is overcome, he says, by making the styles tubular, and inserting a stylet of tempered steel wire, which is to be withdrawn as soon as the style is placed in position, when the projecting top of the latter is bent over so as not to interfere with the movements of the eyelids.

On "The Use and Abuse of the Obstetric Forceps," by Dr. G. M. B. MAUGHS, is a paper marked throughout by good sense, correct principles, and, in general, highly judicious rules of practice.

On "Artificial Pupil," by Dr. M. DICKINSON. This is a paper replete with interest. The author endeavours to show, by the adduction of cases, that, under even highly discouraging circumstances, whenever, throughout any portion of its circumference, the cornea presents a slight extent of transparency, a resort to the operation is always productive of good, often resulting in a complete restoration of sight.

The last paper in the volume before us, by Dr. J. GREEN, is entitled "An Optical Demonstration of the Characteristic Phenomena of Astigmatic Vision," or that visual defect which is dependent on a difference in the refractive power of the eye in different meridians. A very curious subject. Of Dr. G.'s demonstrations no clear account would be given unaccompanied by the pictorial illustrations with which it is accompanied. D. F. C.

ART. XXIV.—*A Practical Treatise on the Diagnosis, Pathology, and Treatment of Diseases of the Heart.* By AUSTIN FLINT, M. D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine in the Bellevue Hospital Medical College, etc. etc. 2d edition. Thoroughly revised and enlarged. 8vo. pp. xiii., 550. Philadelphia: Henry C. Lea, 1870.

DR. FLINT's contributions to the study of diseases of the chest are of a character to place him in the foremost rank among his own countrymen as an

investigator in all that pertains to the pathology, diagnosis, and treatment of this class of affections; in fact, we know of no one who has recently written in English whose views on these points are more original, or who has done more for the elucidation of this portion of our science. The first edition of the book before us was favourably noticed in the July number of this Journal for 1860, and by the medical press generally. The accomplished writer of the review in this Journal has done his work with such thoroughness and impartiality, that it is only necessary at this time to confirm the favourable opinion which he there expressed of the merits of the work, and to indicate some of the changes and additions which have been made in this edition. The ten years which have passed since the publication of the first edition, have afforded to Dr. Flint many opportunities for observing cases of diseases of the heart, and it is upon an analysis of these (four hundred and fifty in number) that he has relied in making his revision. In consequence of the enlarged experience, gained from the observation and careful noting of so many cases, he has modified and corrected some of the statements in the first edition. As an instance of this we may mention that he no longer teaches that purely functional disease of the heart never leads to hypertrophy of that organ, as he has seen this condition occur in a case of exophthalmic goitre, in which no other exciting cause could be assigned for it than the long-continued violent action of the heart.

In the new matter we notice a reference to the sphygmograph, together with some typical tracings of the instrument in various forms of cardiac disease; but we regret not to find an expression of opinion as to the degree of aid we may expect from it in diagnosis, and especially in difficult cases in which the physical signs are obscure. Certainly the sphygmograph does not afford us the assistance which its inventor and advocates claimed that it would, and it is still a matter of doubt whether it will permanently maintain a place in our science. Some of the reported cases will be found to be of interest. Among these may be mentioned one reported at page 124, in which a scirrhous mass surrounded the heart and gave rise to the physical signs of pericarditis with effusion. In another case it was believed that rupture of the interventricular septum had been produced by a blow over the cardiac region. Four cases of thoracic aneurism, treated according to Bowditch's modification of Tufnell's plan, are also reported: in none of these did a cure result; but Dr. Flint does not regard his failure in these cases as a proof that this plan is of no use in any instance.

In conclusion, it only remains for us to commend this book to those who are anxious to acquire a thorough practical knowledge of the diseases of the heart. Dr. Flint has, by the careful revision to which he subjected it, brought it up fully to the requirements of the present day, and it may now confidently be placed in the hands of the medical student as one of the best and most practical treatises on the subject in the English language. J. H. H.

ART. XXV.—*Manual of Chemical Examination of the Urine in Disease; with Brief Directions for the Examination of the most Common Varieties of Urinary Calculi.* By AUSTIN FLINT, Jr., M. D., Professor of Physiology and Microscopy in the Bellevue Hospital Medical College, New York; Fellow of the New York Academy of Medicine, etc. 12mo. pp. 75. New York: D. Appleton & Co., 1870.

THIS small handbook of directions for the qualitative and quantitative examination of the urine was prepared as a companion to a set of test-apparatus furnished by an instrument-maker at Dr. Flint's suggestion, and is of little value in any other connection. As no reference is made to urinary deposits or microscopical investigation, its usefulness is still farther limited. It will, however, be found convenient by those, if any there are, who have not access to one of the numerous larger works upon the same subject. Under the head of

albumen we mark the omission of any statement relative to the forms of that substance which have an unusual reaction with heat and nitric acid; and also of the fact, very important in many cases, and carefully insisted upon by Beale, that when the quantity of albumen is small, either a very little or much nitric acid will dissolve it and prevent its detection. Dr. Flint's suggestion that the several solutions of Féhling's test for sugar be kept in separate bottles and combined as required, is a very good one. The gradual reduction of the copper and consequent vitiation of the mixed fluid is thus avoided. For estimating the amount of urea Davy's process is recommended, and Liebig's mentioned only by name. The author has found, however, that the results are not satisfactory if the American solution of chlorinated soda is used instead of the French. In the appendix there are directions for the analysis of urinary calculi most frequently met with, and tables to facilitate quantitative calculations. These tables are reprinted upon a single folded sheet at the end, which can be cut out and posted in a conspicuous place for easy reference. We regret that the author has followed Dr. Beale in substituting the embarrassing grains and fluidounces for grammes and cubic centimetres. Apparatus graduated according to the decimal system is readily obtained, and renders the whole proceeding much more simple.

E. R.

ART. XXVI.—*The Dispensatory of the United States of America.* By GEORGE B. WOOD, M. D., President of the American Philosophical Society; President of the College of Physicians of Philadelphia; Emeritus Professor of the Theory and Practice of Medicine in the University of Pennsylvania, &c.; and FRANKLIN BACHE, M. D., Late Professor of Chemistry in Jefferson Medical College of Philadelphia; Late Vice-President of the College of Physicians of Philadelphia; Late President of the American Philosophical Society, &c. Thirteenth edition, carefully revised. 8vo. pp. 1810. Philadelphia: J. B. Lippincott & Co., 1870.

AN enlarged leaf, and about one hundred additional pages in the thirteenth issue of this great work, give us the measure of the rapid advance in pharmacological knowledge since the twelfth edition was published, only five years ago. Any analysis of the new matter would be superfluous. As the work has been done before, so is it continued now, and the profession will recognize with peculiar pleasure that the surviving author's skilful hand has lost none of its power. Everything that is of value concerning discoveries in pharmacy, recent uses of old remedies, and the introduction of new ones, will be found fully stated down to the latest possible date. The Dispensatory maintains its position as the most beneficent and generally useful medical book now in use.

E. R.

ART. XXVII.—*Ueber das Vorkommen Fibrinöser Entzündungs Producte in den Bronchien, und Lungen alveolen. Ueber Fibrinöse oder Pseudomembranöse Bronchitis und Pneumonie. Bronchitis Fibrinosa, Bronchitis Pseudo-membranacea, Pneumonia Fibrinosa.* Von Dr. LEBERT, Geheimerrath, und Professor in Breslau.

On the Product formed in the Bronchi and in the Air-cells of the Lungs in Cases of Inflammation of these Organs. On Fibrinous or Pseudo-membranous Bronchitis and Pneumonia, Bronchitis Fibrinosa, Bronchitis Pseudo-membranacea, Pneumonia Fibrinosa.

UNDER the above title, Professor Lebert has published in the *Deutsches Archiv für Klinische Medicin*, running through the numbers for 1869, a very complete, able, and instructive monograph in relation to a form of disease with

which our physicians, as a body, would seem to be but slightly conversant, or, at least, to be little aware of the frequency of its occurrence in connection with ordinary forms of intra-thoracic inflammation, and the modifications it imparts when present to their symptoms, march, and termination. Believing that our readers will be gratified by having laid before them a general analysis of the views advanced by Professor L. in this admirable monograph, we have endeavoured to present one in such a form as shall do justice to the author, and, at the same time, by its conciseness, adapt it to the necessarily limited space appropriated to the bibliographical department of this Journal.

The fibrinous product met with so often in the inflammatory conditions of the bronchi and air-cells of the lungs, mark out, according to our author, the cases in which these conditions occur, a morbid affection, different entirely from, and unconnected with what has been denominated diphtheritis. It must be distinguished also from the results of those somewhat rare, or more properly very doubtful, cases, in which the diphtheritic inflammation, commencing in the throat and larynx, is supposed to extend thence downwards into the finest bronchial ramifications.

During childhood there occurs frequently, in attacks of ordinary bronchitis and of broncho-pneumonia, fibrinous formations in the bronchial ramifications, and yet without the presence of any very characteristic symptoms to indicate their presence, and without the occurrence of any fibrinous shreds in the sputa. In such cases the fibrinous formations are to be looked upon in the light of a mere complication, which may, however, in most cases, augment the suffocative character of catarrhal pneumonia, and also increase the danger of the attack.

There is a single case upon record, that of Hayn, in which the bronchial ramifications and pulmonary cells were, in a new-born infant, clogged with fibrinous deposits. This case proves the possibility of fibrinous bronchitis or fibro-pneumo-bronchitis occurring during intra-uterine life and the first days of infantile existence.

Professor L. describes the form of disease he considers as an acute, essentially fibrinous bronchitis, which, it is true, he admits, considered ontologically, exhibits no very sharply defined pathognomonic characteristics; nevertheless, a very little examination will show its essential character. It occurs twice as often in males as in females, more frequently also during childhood and youth than in after years. It very seldom occurs in the aged. This form of disease is characterized by severe, prolonged paroxysms of coughing, extreme difficulty of respiration, amounting, in some cases, apparently to impending suffocation, with often bloody sputa. The cough and difficulty of breathing are greatly relieved upon the discharge by the mouth of masses of fibrinous matter. This discharge usually occurs between the fourth and sixth day of the attack, in some cases not until the tenth or fourteenth day, or in other very rare cases again, not until the end of the third or fourth week. The discharge may take place only once, or be repeated several times a day. In the acute form of the disease the ejection of fibrinous matter may continue from seven to ten days, but its frequency diminishes usually from the second to the fourth day.

When first expectorated, the fibrinous masses are so intimately incorporated with mucus or blood, that they are very liable to be overlooked. They become much more apparent under water. They will then be seen ramifying in the form of tubes or cylinders, which divide and subdivide until, finally, they acquire a capillary fineness; often, at one end, there occurs a thickening, forming, as it were, a bulb. They are either hollow or solid, and consist for the most part of consolidated fibrinous matter, inclosing numerous white blood corpuscles (pus corpuscles) and a few epithelial cells.

Special auscultatory signs are seldom present in the form of disease under consideration. The following signs have, however, been adduced as diagnostic: A clear sound at a part of the chest where no distension is observable, and where the respiratory movement is very weak, scarcely audible, or when, over a small circumscribed space, the respiratory murmur is audible. Intra-bronchial rattling, friction sound, a valve-like sound, as though a membranous partition sank and rose in inspiration and expiration.

The disease may occur in a mild or in a severe form. The first being attended with moderate and unfrequent paroxysms of coughing and difficulty of breathing; the second, on the contrary, is marked by frequent and intense paroxysms of almost impending suffocation. It is in this latter form that a fatal termination is the most to be feared. Professor L. tells us, as the result of his experience, that the deaths are in the proportion of four in seventeen cases. In only three was death produced by asphyxia. In fourteen cases it was consequent upon adynamic typhoid collapse.

The disease may run its course rapidly, while in other instances it may be somewhat prolonged. It may have a duration of from one week to one week and a half, or it may run on for three or four weeks or even longer. When death takes place, it ordinarily occurs between the sixth and twelfth days. The diffuse vesicular pneumonia, which is becoming to be more carefully distinguished from an original dissemination of catarrhal bronchitis, though, it is true, only a kind of intermediate morbid condition, resulting from a transition of one disease into the other, may occur, as was pointed out forty years ago by Lobstein of Strasburg, under the name of *croupal* bronchitis. A case in point is referred to by Morgagni. This theory of croupal, or more correctly, of fibrinous bronchitis or pneumonia is also sustained by Rokitansky.

We are to recollect that, as was pointed out some twenty-five years ago by Remak, that small fibrinous bronchial concretions are almost invariably met with in the proper sputa of ordinary pneumonia, and further, that even large fibrinous masses are occasionally coughed up in simple pneumonia the same as in the acute fibrinous form. In proof of this fact there has been put on record a series of cases in which a correct diagnosis has been clearly established: one by Morgagni, one by Oppolzer, one by Barth, and one by Professor L. In cases of ordinary pneumonia, fibrinous expectoration may occur in the course of the disease if protracted.

Not less interesting is another group of cases of acute pneumonia, in which, usually, there are formed small bronchial and pneumo-cellular fibrinous concretions. The disease occupies usually the entire bronchi of one lobe of a lung. Morgagni records a case of this kind; and a highly interesting series of similar cases is described by Nonat as having occurred during an epidemic of influenza, in patients especially who were convalescing. Many cases are related as having been treated at Schützenberger's clinic at Strasburg. This form of pneumonic disease is described by Professor L. in his work on *Pathological Anatomy*, where he gives a drawing also of the fibrinous product found in the lungs. Professor L. thinks it probable that it is to the presence of this fibrinous deposit in the lungs that the fatal result is generally due in those cases of pneumonia which eventuate in death.

The chronic form of idiopathic fibrinous bronchitis is met with more often in males than in females, in the proportion of nearly three to two. It occurs more often also during the earlier than during the later periods of life. It is seldom met with in persons over sixty years of age. They who are most liable to its attacks are such as, in popular phrase, "take cold easily," who are the subjects of chronic catarrh, or who are liable to frequent exposure to a cold and damp atmosphere. There would seem to exist, apparently, a predisposition to the disease in all the members of certain families.

The attack commences usually as one of simple catarrh, only assuming in its course those symptoms which stamp upon it its fibrinous character. The latter may, however, become apparent with great promptness. Often the expectoration of fibrinous matter is preceded by hæmoptysis. Severe paroxysms of coughing, and a sense of impending suffocation, may precede the expectoration of fibrinous matter, and be frequently repeated; at each repetition, however, abating gradually in violence. In prolonged cases the leading symptoms are such as to lead to a suspicion of the presence of tubercles in the lungs.

Chronic fibrinous bronchitis may be developed after repeated attacks of the disease in its acute or subacute form, occurring at very different, and sometimes prolonged intervals. During these attacks, before the fibrinous discharge takes place, the vital capacity of the lungs may become very much

diminished, but, after the coughing-up of the excreted fibrinous matter, it is liable again to return to its normal condition. The physical signs of the chronic form of fibrinous bronchitis are the same as in the acute form.

The ordinary termination of the disease, even after long years of duration, is usually favourable. In twenty-seven cases, three, or eleven per cent., terminated fatally during a fit of strangulation.

It is to be kept in mind that the chronic form of fibrinous bronchitis may occur as a symptomatic affection during the course of some other disease. Seven well-marked cases of this are on record, in one of which it came on in a case of syphilis. Deep-seated ulceration of the trachea and at its place of bifurcation will cause bronchial contraction, dilatation ensuing, however, upon the expectoration of a membraniform substance. Deep-seated ulcers of the respiratory tubes Prof. L. has met with only as a result of syphilis. In one case the chronic fibrinous bronchitis occurred in conjunction with fatty degeneration of the heart with partly gangrenous and partly purulent pneumonia; in a third case it occurred in connection with empyema; and in four others with pulmonary tuberculosis. Chronic disease of the lungs, more than any other malady, would seem, therefore, to give a predisposition to the occurrence of chronic fibrinous bronchitis.

The pathogeny of abnormal fibrinous productions in the bronchi and pulmonary cells is of a far more extensive and common occurrence than is ordinarily supposed. Whenever inflammation becomes developed in these parts, as has been correctly stated, its product is inclined to assume a fibrinous character. In cases of common pneumonia it is in the nearest bronchial tubes that the fibrinous character is first developed. It is entirely devoid, however, of anything specific in its character.

The mechanism of the formation of these fibrinous bodies in inflammation of the air passages is, according to our author, as follows: premising that, according to Cohnheim, the fact being confirmed by the more recent experiments of Prof. L., the so-called pus-cells are, for the most part, free white blood corpuscles. With the escape of these *leucocytes*, there exudes, at the same time, a spontaneously coagulable albuminoid fluid. Its consolidation, apparently is the first to take place, being followed by the solidification of a fibrinous fluid, exuded simultaneously with it, which includes or envelops the free white cells and a portion of the adjacent epithelium. The fibrinous formation thus fashioned is perfected by a quick repetition of the same processes. In general, the exudated fibrogenetic fluid appears to be very intimately connected with the formation of the white blood cells. Prof. L. never saw an instance in which red blood corpuscles were found to be imbedded in these fibrinous formations. A proof of this is furnished by the sputa proper to pneumonia; separate its different components, and it will be found that red blood cells exist only in the more slimy portion, which is abundant in mucus, and secreted solely by the glandulæ of the bronchial mucous membrane. In this viscous, tenacious fluid, more or less coloured by the presence of red blood corpuscles, will be found the small, tubular ramifications mechanically entangled together, and imbedded in a granular, filamentous basis, in company with many round, enucleated cells and white blood corpuscles, which, upon the application of acetic acid, are rendered more apparent, but without any admixture of red blood cells.

That not only diffused cellular pneumonia, but, also, the catarrhal bronchopneumonia of early life has a very decided disposition to assume the fibrinous form is proved by the fact of the relative frequency with which we encounter, at the bedside, the fibrinous formation as an anatomical complication in the latter disease during childhood. Nonat's cases, which occurred during the prevalence of epidemic catarrh at Paris, in 1837, exhibited, as it were, a kind of transition from one to the other, of the two leading forms of inter-bronchial fibrinous deposit.

Fibrinous deposits may be absent entirely in cases of ordinary bronchitis, even when occurring in young persons; even the most severe cases of pneumonia may exhibit a relatively small fibrogenetic tendency, without our being able to discover for this any immediate cause. Prof. L. believes that, in some cases, there may be a particular predisposition to fibrinous deposits, present in some persons, absent in others. He has known several sisters of a family, all of whom

were simultaneously attacked with fibrinous bronchitis. Some peculiarity in the local inflammatory process may, it is not absurd to suppose, also exert a certain amount of influence, so that a proportionately greater amount of fibrogenetic fluid is made to accumulate in the vessels at the seat of the inflammation than is the case in inflammatory processes occurring in other individuals; as a consequence of this state of things, it is reasonable to believe, that a much greater amount of fibrinous matter will be poured out into the bronchi or pulmonary cells—the excretion of fibrinous matter being an item in the ordinary course of the disease.

This state of things—the overfilling of the inflamed vessels with fibrinous matter—may not be remedied by the exudation of the fibrogenetic matter, and then the true character and location of the attack is first developed; from which epoch its course may be prolonged for days, or even weeks, and, assuming a chronic form, from one or many years, with varying length of intervals between its accessions. Even after bronchial inflammation has been arrested, it may be reinduced readily, with its fibrinous character. After the lapse of years, however, the local predisposition may finally cease.

Fibrinous bronchitis has, by some writers, been pronounced a severe form of croup, resulting from the spreading downwards, into the trachea, bronchi, and pulmonary cells, of the croupal inflammation, commencing at the fauces. This view of the form of the disease in question is not so common now as formerly. It is true that in cases of pneumonia in the smaller bronchial ramifications fibrinous products may occur, and from thence spread throughout all the bronchi, even to the upper bronchial bifurcation. This has been proven by recent observations recorded by Lücken and Zieful. In cases where the ordinary expectoration of small coagula, as are seen in pneumonia, and which are not replaced by fine capillary filaments, upon an anatomical examination of the hepatized lung there will be found in the proper pulmonary cells only a moderate accumulation of cysts, as it were, completely glued together, and presenting no trace of an intermediate fibrinous substance, resembling the fibrinous concretions of the bronchial ramifications. We observe, further, in cases of true fibrinous bronchitis, as in pneumonia, large concretions discharged by coughing, terminating very often in very fine, almost capillary ramifications, the finest having a diameter of 1–2 mm.; this, it is true, is often absent. It, is, therefore, very probable that the fibrinous formations in the bronchi are of very different diameters.

It is very evident that, amid all the varieties exhibited by fibrinous inflammations of the respiratory organs, there present themselves two very distinctly marked forms of true fibrinous bronchitis, having their anatomical bases in the more or less disposition to, the extent of surface occupied by, or the more or less persistence of, the fibrogenetic morbid action. The amount of fibrinous deposit, the nature and extent of its divisions and bifurcations; the adhesiveness of the entire mass, are all disproportionate to the excretory power of the bronchi, and therefore decrease the vital respiratory capacity of the lungs. Hence the great difficulty of breathing, the necessity of increased and more forcible efforts to relieve the bronchi of their oppressive load, by severe paroxysms of coughing, the frequent rupture of small bloodvessels, and the impending sense and danger of suffocation. Very often the fibrogenetic action diminishes or ceases, subsequent to frequent copious and intense paroxysms of expectoration, and a condition of general convalescence sets in.

Fibrinous bronchitis, as above described, exhibits as a secondary disease of the respiratory organs, the utmost multifariousness, in different cases, as to its causes and the extent of bronchial fibrogenesis. It is a well-established fact that fibrinous bronchitis may occur during all and every attack of inflammation of the respiratory organs, as was pointed out many years since, by Prof. L. Now a form of disease, like the one under discussion, having so different and diversified pathological bases, must necessarily become, every day, in the view of all reflecting physicians, stripped of its character, as an essential malady. Inflammation itself is, in fact, experiencing, in this respect, since the commencement of the present century, the same lot which has befallen the former supposed essential character of fever. D. F. C.

ART. XXVIII.—*Die Epidemische Diphtheritis und deren Schnellste Heilung. Nach Klinischen Beobachtungen Bearbeitet.* Von Dr. ALBAN LUTZ, Prakt. Arzt. in München. 8vo. pp. viii, 62. Wurzberg: Druck und Verlag der Stahelischen Buch- und Kunsthandlung. 1870.

Epidemic Diphtheria and its Treatment considered from a Clinical Standpoint. By Dr. ALBAN LUTZ, of Munich.

THE author of this pamphlet seems to have had two objects in view in writing. 1st. To prove that diphtheria is primarily a local disease, and only affects the constitution secondarily. 2d. To make known the remarkable power which he asserts the flowers of sulphur possess, when blown into the throat, of causing the disappearance and destruction of the membrane. The first proposition is, he thinks, sustained by the fifteen cases he reports, the second by the remarkable success which followed the insufflation of sulphur in four cases. This evidence is hardly a sufficient number in the one instance to overturn the well-established theory as to the general nature of the disease, or in the other to establish the merits of a treatment in a disease in which so many remedies have appeared to be successful in at least an equal number of cases.

Dr. Lutz thinks that the claim of diphtheria to be considered a local disease is further established by the fact that fever rarely, if ever, precedes the deposition of the membrane; may sometimes be absent during the entire course of the disease; and, when present, is not observed to increase regularly in intensity until the maximum is reached, as is the case in typhoid and the eruptive fevers. No regularity, moreover, is observed in the order of the succession of the symptoms, and this is especially true, not merely of the deposition of the membrane, but also of the occurrence of the enlargement and tenderness of the cervical and other lymphatic glands, and of paralysis. The continued fevers also have the further property in common that one attack of any of them seems to protect the individual against subsequent attacks, which is well known not to be the case in the disease under consideration. Still another argument against the general nature of the disease is the power which he thinks we have of cutting the disease short—a power we certainly do not possess in the continued fevers, but which is assuredly within our reach in the treatment of some confessedly general diseases. Sulphur, as a remedy in diphtheria, appears to have been proposed in 1868, by Barbosa, a physician of Lisbon, but has since been used, not only by Portuguese, but by German practitioners. The following are among the effects produced by the insufflation of the flowers of sulphur: The membrane becomes soft, and dissolves without destruction of the tissues; the inflammation moderates; the glands diminish in size; the fever subsides; appetite and sleep, together with a feeling of health, return to the patient. Sulphur, he says, acts in two ways when locally applied: 1st. As an irritant. 2d. As a parasiticide. Now as it can scarcely be admitted that it is in the former that its action is curative in diphtheria, we are forced to the conclusion that the beneficial results following its use are due to the property it has of destroying the lower organizations, and hence, our author argues, the contagious principle in diphtheria must be a cryptogamic growth. This view of the nature of the disease he finds confirmed by microscopic examination of the membrane. The flowers of sulphur are introduced into the throat of the patient by means of an India-rubber tube and handball syringe, and the application may be repeated three or four times a day, combined or not, as the judgment of the physician may dictate, with chlorine water and carbolic acid. Quinia, iron, and other tonics are to be given wherever they may seem to be especially indicated. Wherever his treatment was employed Dr. Lutz has never had a serious complication or troublesome sequel, and he adds, that these may always be avoided by a prompt use of the sulphur.

It is scarcely necessary to criticize views which are so much at variance with those of pathologists and microscopists; it will be sufficient to remark that one or two of the author's own cases are not corroborative of his view of the local nature of the disease, for there were decided constitutional symptoms before

the deposition was discovered. The absence of these symptoms is, moreover, not sufficient to exclude the idea of a constitutional disease, for there are many cases of scarlatina in which sore throat is its first manifestation, and many of measles in which lachrymation precedes the fever and the occurrence of the eruption. The fact, also, that the general symptoms are frequently most marked in cases where the local disease is of little extent—nay, more, that when the epidemic influence is peculiarly virulent it is not uncommon to see the evidences of blood poisoning unaccompanied by membranous deposition, seems to be an insuperable objection to the adoption of the theory which he seeks to establish. We do not mean by this to deny that the disease is capable of local propagation, *i. e.*, that a portion of diphtheritic membrane brought in contact either with the throat, or an abraded surface in an apparently healthy person, may sometimes increase in size, and even give rise to all the symptoms of diphtheria. But in very few cases can the actual transferrence of membrane from throat to throat be distinctly traced, and as the cryptogamic nature of the deposition is by no means generally admitted, it is scarcely conceivable that the emanations from the mouth and nose of a diphtheritic patient, no matter how concentrated, could ever produce a purely local but specific inflammation.

In regard to the local application of sulphur, we have only to say it is well worth a trial. So many remedies have been recommended and have failed, that we may be pardoned, perhaps, if we do not too precipitately enroll ourselves among its advocates. J. H. H.

ART. XXIX.—*Essai sur les Maladies du Cœur chez les Enfants.* Par le Dr. H. RENÉ BLACHE, Ancien Interne en Médecine et en Chirurgie des Hôpitaux de Paris, etc. etc. etc. 8vo. pp. 224. Paris: P. Asselin, 1869.

THE peculiarities which diseases of the heart present in early life have not, our author thinks, received the attention at the hands of systematic writers which their importance demands. Not only is he disposed to think that the heart is more frequently diseased in childhood than is generally admitted, but also that cardiac affections may at this time present certain modifications of the usual symptoms. The causes, too, of this class of diseases are not precisely the same in the youth and the adult. The well-written pamphlet before us indicates some of these peculiarities and modifications, and contains the reports of no less than fifty-seven cases of various forms of cardiac disease, which more or less fully sustain and corroborate the views expressed by M. Blache.

Diseases which have, as a marked characteristic, a tendency to implicate the heart, appear to have this tendency very much intensified when they occur in subjects less than fifteen years of age. As an example we may mention rheumatism, in which, as is well known, the danger of cardiac complications is greater the younger the patient. But it is not only in well-marked cases of articular rheumatism that this complication may occur, for cases of endo- and pericarditis occurring in children suffering simply from torticollis or erythema nodosum are reported. In fact, it is a question in the author's mind whether inflammation of the investing or lining membrane of the heart may not sometimes be of rheumatic origin when there is no other manifestation of the disease. The same tendencies to inflammatory disease of the heart is manifested in scarlatina when it occurs in children. On the other hand, hypertrophy and dilatation of the heart are less common as complications of renal disease; and this is readily explained by the fact that the most frequent form of Bright's Disease in early life is the acute desquamative nephritis, in which this complication is much less frequent than in the contracting or cirrhotic form. Chronic affections of the respiratory organs are not so likely to induce incurable disease of the heart in children as in adults, simply because they themselves are frequently capable of relief if not cure in the very young and healthy, and because the equilibrium of the cardio-pulmonary circulation is more easily reëstablished in organs which are every day gaining in force. It

is true, however, that in hooping-cough, in consequence of the great distension of the right ventricle, which occurs during the paroxysms of coughing, such permanent injury may be inflicted upon the heart as to render recovery impossible. Deformities of the chest also, when of such a nature as to occasion serious obstacles to the circulation, are not infrequently accompanied by disease of the heart.

Certain symptoms, which in the adult are constant accompaniments of organic disease of the heart, are frequently absent even when there exists a serious valvular lesion, and much stress is laid on the frequent want of a due correspondence between the general symptoms and the physical signs by M. Blache. This absence of constitutional symptoms, he explains by the integrity of the muscular structure of the heart in early life. Hence it is that in children secondary congestions of internal organs and diminution of the peripheral circulation, are so infrequent. But if the general symptoms are unsatisfactory at this time of life, the physical signs are even more positive than in the adult. Thus we find that bulging of the pericardial region is more marked (the reason for this is sufficiently obvious), and pericardial friction and valvular murmurs more distinct.

A few cases are reported to show that both pericarditis and endocarditis may occur in utero. One case is given in detail, in which a loud systolic murmur indicating mitral insufficiency disappeared in course of time, and other cases in which murmurs became much less intense; from which Dr. Blache infers that under favourable circumstances valvular lesions in children are capable of relief, if not cure.

We have thus given a very hurried review of this little *brochure*, hoping by it to put our readers in possession of the author's views. We cannot say that there is much that is absolutely new in the book, but it certainly contains the reports of a great many interesting cases, and may be regarded as a very excellent *résumé* of the subject of which it treats. J. H. H.

ART. XXX.—*Renal Diseases; A Clinical Guide to their Diagnosis and Treatment.* By W. R. BASHAM, M. D., F. R. C. P.; Senior Physician to the Westminster Hospital, and Lecturer on Medicine, &c. pp. xiv., 244. London: John Churchill & Sons., 1870.
The same. With illustrations, pp. 297. Philadelphia: Henry C. Lea, 1870.

THE subject of the urine in its physiological and pathological relations has been so exhaustively treated of late years in numerous easily accessible works, that an additional volume, without new investigations, can be of value only when issued in the immediate interest of clinical teaching. Dr. Basham's purpose is to promote practical knowledge of renal diseases, and his large experience in bedside instruction has enabled him to make this guide to their diagnosis and treatment an appropriate sequel to his former extended publications. He follows the classification adopted for many years in his lectures on medicine, and divides the subject matter into three parts. Part 1 treats of the first group of kidney affections, those "marked by symptoms more or less of an inflammatory character," under the general head of *nephritis*. The *first section* is devoted to their *causes and pathology*, and discusses the following modes of development and the resulting conditions: idiopathic (doubtful); external injuries; substances taken internally, including turpentine, cantharides, and others acting directly, with lead and phosphorus remotely; febrile poisons; cold and wet; gout (calculous nephritis and pyelitis); tubercle in the kidney or its outlets; cancer; peri-nephritis; parasitic ova; pregnancy. *Section second* gives the *symptoms, diagnosis,* and *treatment* of the above.

Part 2 presents the second group, non-inflammatory diseases, as *chronic nephritis* or *chronic albuminuria*, and subdivides them into four forms according to the structural changes. Of these we shall speak below. The causes

described are pre-existing blood poison (certain fevers); strumous taint; syphilitic taint; gouty taint; mineral poisons; alcoholized blood; obstructed states of the circulation; purulent drain; congenital hydro-nephrosis. The closing section on the *symptoms*, *diagnosis*, and *treatment* of these progressive degenerations, is followed by part 3, which contains a comprehensive and intelligible account of the significance of physical, chemical, and morphological changes in the urine. A few illustrations of urinary deposits have been very properly introduced by the American publisher. As the contents of these chapters consist chiefly of known facts and of opinions generally accepted, we dismiss them from farther consideration, with the remark that the easy descriptions and compact modes of statement render the book pleasing and convenient. The peculiar classification of the forms of structural change deserves, however, a passing notice; especially as the author while giving his own views, introduces incidentally full references to those of Johnson, Dickinson, Grainger Stewart, and the German writers. A concise account is thus presented of the subject which students usually find most obscure and perplexing. Dr. Basham recognizes seven forms of pathological change in the kidney; three types of alteration resulting from an inflammatory process, and four from more chronic degenerations. The three former represent merely three successive stages of a continuous process. First, the purplish-red kidney of acute Bright's disease. Second, the heavier kidney of uncured acute Bright's disease, of yellowish flesh hue, the early stage of the large, white, smooth, anæmic kidney, which is the third and last variety.

The chronic forms are:—

1. The granular contracted red kidney (granular and fatty), color reddish-yellow with characteristic granulations. 2. The granular enlarged, pale, mottled kidney with similar granulations. 3. The amyloid, waxy or lardaceous kidney. 4. The atrophic, gouty or contracted kidney. Dr. Basham insists upon the independent character of the first variety, and associates with it rather than with the fourth the term *cirrhotic*. He believes that it is never the sequel of either the "large smooth kidney," or of the "enlarged, pale, mottled kidney." He also denies its identity with the fourth form, which he says is found in cases of gout only, and is the direct result of the deposit of urates in the fibrous structure of the organ; while the granular contracted reddish-yellow kidney occurs also in patients who are not afflicted with gout. The condensation of fibrous tissue is much less and the granular change in the cells more marked. It is admitted that the symptoms in the two instances are very similar. That a granular or fatty change of the cells is frequently associated with increase and contraction of the fibrous elements is a fact familiar to all; but we cannot consider either the anatomical or clinical characters of this condition sufficiently distinctive to justify its designation as an independent kind of degeneration. In other respects the views of Dr. Basham correspond to the simpler arrangements of other authors. E. R.

ART. XXXI.—*A Treatise on Syphilis.* By WALTER J. COULSON, F. R. C. S., Surgeon to the Lock Hospital and to St. Peter's Hospital for Stone and Urinary Diseases. 8vo. pp. xx., 373. London: John Churchill & Sons, 1869.

THIS work, as we learn from the preface, is founded upon a course of lectures delivered by the author to the students of the Lock Hospital. Certain alterations and additions have been made, and it is now offered to the profession as "a compendious, yet . . . . sufficiently complete treatise on syphilis." Mr. Coulson is an enthusiastic "dualist;" that is to say, a believer in the essential difference between the lesion, which in this country is usually called the *chancroid* or *simple sore* (but which he calls the soft or non-infecting chancre), and the initial lesion of syphilis, for which should properly be reserved the name of *chancre*, but which is designated by Mr. Coulson as the infecting

chancre. As our author's views upon these theoretical questions are such as we ourselves entertain, we are of course prepared to commend them as correct; and it is but simple justice to say that in the pages before us these views are very clearly and forcibly enunciated. At the same time we cannot help thinking that a student going into practice with the idea that the diagnostic marks of chancroid and chancre were always to be found as sharply defined as he would reasonably infer from the teaching of Mr. Coulson, would be not unfrequently wofully disappointed. It is indeed this practical difficulty, we believe, that has so often driven surgeons into the convenient, if unphilosophical belief, that there is no essential diversity among venereal sores; attributing thus their own mistakes to a fancied confusion in the operations of nature. The fact is, however, that nature does not err, though doctors unquestionably do, and the criticism which we have to make, therefore, upon this part of Mr. Coulson's book is, that he represents the diagnosis of primary syphilis as a much simpler affair than it really is; it being, indeed, often quite impossible to make a positive diagnosis without having the case under observation for a considerable time, relying thus more upon the *natural history* of the case, than upon the symptoms presented at any particular period. Nor should this excite surprise, for the same thing is seen in other diseases—the eruptive fevers for instance, and in the case of syphilis, there is the additional difficulty, that the histories given by patients are almost invariably inaccurate, even when not intentionally falsified.

Leaving these theoretical considerations, we take pleasure in commending Mr. Coulson's book as a sound practical guide to the recognition and treatment of venereal sores and their consequences. The different varieties of bubo are well described and the proper method of dealing with each clearly pointed out. The various syphilitic eruptions are successively commented upon, and their distinguishing peculiarities indicated succinctly, and as satisfactorily, probably, as can be done without the aid of illustrations. Mr. Coulson's remarks upon the use of mercury in syphilis seem to us to be eminently just: the mode of administration which he himself usually prefers, is that by inunction. "The patient, as a general rule, may be directed to rub in half a drachm or a drachm of the strong mercurial ointment every night. The part which I select for divers reasons, is the soles of the feet. One obvious advantage is, that the mercurial ointment in this situation never gives rise to erythema, as it commonly does in other situations, where the skin is more sensitive. Thick woollen socks are to be worn night and day . . . Every four or five days the feet should be well washed, and the socks changed, to insure absorption, and to prevent irritation of the nails."

The latter part of Mr. Coulson's volume does not strike us as favourably as the first portion; the chapters on visceral syphilis and on syphilitic affections of the muscular and nervous systems are not very well arranged, and bear the marks of hasty compilation, rather than of either pains-taking research or original investigation. We observe with regret that no notice is taken of the early labours of Dr. Thomas Reade, in connection with the nervous lesions of syphilis, and, indeed, so far as we know, this gentleman's name is not once mentioned in Mr. Coulson's pages. We cannot but think that the long delay in publication, to which our author alludes in his preface, might have been profitably spent in revising and perfecting the latter portion of his work.

There are two or three points which have attracted our attention in perusing Mr. Coulson's volume, which seem to call for remark: One is the reference in the preface to the "deplorable error" which, according to our author, seems to be widely prevalent among British surgeons of "administering repeated courses of mercury to a patient every time that he may contract a soft or non-infecting chancre." We believe that the large majority of surgeons, both at home and abroad, whether dualists or unitists, are agreed not to give mercury for primary symptoms, at least unless induration is very clearly marked, and we cannot but feel that this accusation of ignorance is much too sweeping to be just.

Again, as a matter of taste merely, we should prefer not to see in the table of contents and in the index, "Mr. Walter Coulson's method," and "Mr. Walter Coulson's observations," heralded so frequently. In his commendation of "Zittmann's method," we cannot but think that our author has momentarily for-

gotten himself. Surely Mr. Coulson does not really attribute much importance to "three pints of the strong decoction, hot," in the morning between seven and ten, and "three pints of the weak decoction, cold," in the afternoon between three and six, with coffee, bread and butter, and a chop at 11 A. M., and tea, bread and butter, and a steak at 7 P. M. Suppose the cook should, by an unfortunate error, serve the beef for breakfast, and the mutton for tea, does Mr. Coulson seriously think it would impair the efficacy of the "treatment?"

From what has been said, it will be seen that our estimate of the volume before us is upon the whole rather favourable than otherwise; at the same time there are better books, both for student and practitioner, in the market, and while Mr. Coulson's work does not add anything to what was already known (indeed it does not profess to do so), we do not think it will much increase his own reputation as a writer, though it may doubtless serve an useful purpose by diffusing knowledge in an accessible form.

The book is handsomely printed, and presents a neat appearance in spite of its edges being trimmed in what we regret to know is called the "American style."

J. A., Jr.

ART. XXXII.—*Lectures on the Principles of Surgical Diagnosis: especially in relation to Shock and Visceral Lesions.* Delivered before the Royal College of Surgeons of England, by F. LE GROS CLARK, F. R. C. S., Surgeon to St. Thomas's Hospital, etc. etc. 8vo. pp. xiv., 345. London: John Churchill & Sons, 1870.

THESE lectures were delivered in the theatre of the College of Surgeons, during the sessions of 1868 and 1869, and are now reprinted (with some few additions) from the pages of the *British Medical Journal*, in which they first appeared. The lectures are twelve in number, the first being introductory, and the others treating successively of the general principles of surgical diagnosis; shock; fractures of the skull; lesions of the encephalon; injuries of the spine, and lesions of the spinal cord; fractures of the chest, and lesions of the lungs; lesions of the neck and throat, and of the heart; lesions of the abdominal walls and viscera; and of injuries of the pelvis, and lesions of the pelvic viscera.

Each of these important subjects is handled in a masterly and, we may add, very attractive manner, and we do not believe that any surgeon can read Mr. Clark's lectures without both profit and pleasure. We do not purpose to offer our readers an analysis of the volume before us, nor to indulge in any extended comments upon either its matter or style, but shall merely invite attention to one or two points which seem to us to call for special remark. Several pages are devoted to the subject of *temperature* in surgical injuries. "In simple *shock* and *reaction*," our author observes, "the fall in temperature appears to average about one or two degrees, as tested at the time of the patient's admission into the hospital, generally about half an hour or an hour after the accident; and the reaction is marked by a rise in temperature to over 100 degrees, and usually below 103 degrees, within the next thirty-six or forty-eight hours." Hemorrhage coexisting with shock tends to produce a still greater reduction of temperature, the lowest point reached in any case observed by Mr. Clark, in which recovery followed, being 91°.2, the case being one of cut throat. "In *Rigor*, the temperature rises always shortly before the commencement of the attack, and remains high for a varying length of time, generally about half an hour after the termination of the shivering. In the rigor of pyæmia, the height to which the temperature may rise appears to vary with the acuteness of the disease, ranging between 100 degrees and 106 degrees. In *Operations*, there was usually a fall of about half a degree. during or after the operation, in those cases which recovered. Chloroform seems to exercise little or no influence on the temperature under these circumstances. In the fatal cases no such fall took place. The temperature has been rarely observed to fall below 97 degrees, during

the shock consequent on an operation. . . . . In the reaction succeeding an operation, if the temperature exceed 104 degrees, the prognosis is decidedly unfavourable; but not necessarily so, if no rise occurs, provided the general condition of the patient be not otherwise unsatisfactory. . . . . The maximum temperature is reached in from twenty-four to forty-eight hours after operation in cases which recover." In Mr. Clark's experience the temperature before death in cases of inflammation following brain injury is higher than that reached in any other surgical cases; "the highest death temperature of which we have a record was 106 degrees, in a case of abscess of the brain complicated with pyæmia." Upon this point we cannot but think the experience of St. Thomas's Hospital exceptional, for it is usually found, we believe, that the temperature rises higher in *spinal* than in *cranial* injuries; perhaps the highest point reached being 111 degrees Fahr. (in a case recorded by Sir Benjamin C. Brodie), which temperature persisted even after death. [*Med.-Chir. Trans.*, vol. xx. p. 147.]

With regard to the propriety of operating during the existence of shock, Mr. Clark justly observes that the decision in each instance must depend upon the particular circumstances of the case: "Observation has taught me that operations of some severity may be undertaken, during shock, without seriously adding to the risk, if security against loss of blood can be insured," but on the other hand, if the lesion be not serious, "speedy reaction and normal re-establishment of the nerve functions may be expected," and "under such circumstances it is better to wait for reaction, before any fresh shock is inflicted." The exhibition of chloroform in profound shock, our author looks upon as inadmissible. We have but little experience with this particular anæsthetic, but as regards ether we can testify to its applicability in any case where the degree of shock permits the question of operation to be raised at all; we have repeatedly known the pulse to rise upon the administration of ether, and the patient's general condition to be absolutely better after an amputation done with the aid of this anæsthetic, than before the operation was begun.

Trephining in cranial injuries, Mr. Clark regards "as an expedient fraught with danger;" nevertheless he advises it in the treatment of certain forms of fracture, and in cases of intracranial suppuration. With respect to the same operation in cases of spinal injury, our author, after a full and candid examination of all that has been advanced in its favour, comes to the conclusion that trephining the spine is not "brought within the pale of the justifiable operations in surgery."

We shall go no further in our extracts from Mr. Clark's volume, which we most cordially and earnestly commend to the attention of our readers. We have but one regret to express in connection with the work, and that is that its author had not (as none could have better,) made it an exhaustive treatise upon the subjects which it embraces. This, indeed, we take to be a prevailing fault in modern surgical writing; there is so much to be read, and it is so widely scattered through various monographs and journals, that there is a strong temptation for any one (and especially for one who like Mr. Clark is entitled to speak *ex cathedrâ*) to draw from personal experience rather than from the recorded observations of others; and thus the evil multiplies itself, so that for a student or ordinary practitioner to acquaint himself with the modern doctrines of, *e. g.*, *shock*, a half dozen or more separate papers or books must be collected and read, because there is no exhaustive essay on the subject, the requisites for accurate study being thus increased to such a degree as to deter many, if not most from familiarizing themselves with the results of modern researches.

Mr. Clark's lectures are neatly and correctly printed, and sparsely illustrated with sufficiently good wood-cuts.

J. A., JR.

ART. XXXIII.—*The Indigestions; or, Diseases of the Digestive Organs functionally Treated.* By THOMAS KING CHAMBERS, Hon. Physician to H. R. H. the Prince of Wales, etc. etc. etc. Third American Edition, revised. 8vo. pp. 383. Philadelphia: Henry C. Lea, 1870.

WE should be glad to think that our review of a former edition of this work (see No. of this Journal for July, 1867) contributed in any measure to bring it to the favourable consideration of our brethren in this country. The work has been received with great favour by American physicians. As evidence of this, the author has revised the third edition for the American publisher, a new edition not being yet required in England. He is warranted in saying, as he does in the preface, that he has faith in the kindly feeling with which it will be here received.

In treating of "the indigestions," Dr. Chambers is peculiarly happy, both as regards the matter and the manner. He treats of the various forms of disorder of the digestive system in their relations to the different foods; the difference of seat, namely, in the stomach and in the intestinal canal; the agency of the salivary fluids; the secretions of the glands of the stomach and intestine; the pancreatic fluid, and the bile; the numerous disturbing agencies, intrinsic or extrinsic; and the therapeutic objects. In this comprehensive view of the subject he brings to bear upon it the latest physiological facts relating to digestion, and he exemplifies the various forms of disorder by introducing a large number of cases. The latter are always pertinent, and they are presented with clearness and conciseness. Herein he shows a tact which is as desirable as it is rare. In short, with respect to the matter, we commend the work most cordially, as containing an excellent summary of our present knowledge in this department of medicine, and abounding in sound, practical precepts. We consider that the work is eminently calculated to do much good, by substituting correct views respecting dietetics, in the place of erroneous and injurious notions which have been, and are still prevalent, both in and out of the profession.

We take great pleasure in commending the work as regards its manner. It is written in a sprightly, colloquial style, which arrests and engages the attention. It is not often that one can say of a medical treatise that it is as interesting as a novel. We may say this of Dr. Chambers' work without any disparagement of its matter. It is a book which may be taken up with pleasure when heavier reading would prove tiresome. The busy practitioner who wishes to make available for improvement his irregular moments of leisure, knows how to appreciate an excellence of this kind.

The call for a third edition in America, in anticipation of a similar requirement in England, is sufficient proof that our opinion of the merits of the work, as expressed in a former review, has been sustained by the sentiment of the profession in this country; and Mr. Lea is entitled to thanks for responding to this call. A. F.

ART. XXXIV.—*The Membrana Tympani in Health and Disease. Illustrated by twenty-four chromo-lithographs. Clinical Contributions to the Diagnosis and Treatment of Diseases of the Ear, with a Supplement.* By Dr. ADAM POLITZER, of the University of Vienna. Translated by A. MATHEWSON, M. D., and H. G. NEWTON, M. D., Assistant Surgeons to Brooklyn Eye and Ear Hospital, &c. 8vo. pp. 183. New York: Wm. Wood & Co., 1869.

IN his *Introduction*, Dr. Politzer speaks of Toynbee as the pioneer in critical examinations of the changes produced in the membrana tympani in disease, and also mentions the more recent researches of Wilde and Von Tröltsch.

The importance of *post-mortem* examinations of diseased conditions of the ear is dwelt upon; "and since," says he, "in my opinion the diagnostic significance of any condition of the membrana tympani can only be estimated and

established by a comparison with the *post-mortem* condition, I recorded with especial care those cases in which there was a near prospect of a *post-mortem* examination."

Of the importance of examination of the membrane, he says: "An accurate examination of the membrana tympani is indispensable for a complete and exhaustive diagnosis. In consequence of its anatomical structure, the membrane stands in very intimate relation to the diseases of the external and middle ear. . . . . The surfaces thus become the seat of appearances, which, revealed to us by inspection, permit a conclusion concerning the state of the middle and external ear. . . . . The lesions of the middle and external ear, on the whole, furnish the most frequent sources of functional disturbance in the auditory apparatus; and, again, such disturbances are often associated with changes in the membrane. Therefore we find anomalies upon the membrana tympani in the majority of aural patients."

The next chapter is devoted to the *Anatomy* of the membrane, both general and microscopical. Its *relative position* to the *meatus*, its *size, inclination, curvature*, &c., are all accurately described. The membrane is divided into three layers: external, or *dermoid;* middle, or *substantia propria;* and internal, or *mucous.*

Next follows the chapter on *Inspection*, where we have a description of the present mode of examining the membrane. A funnel-shaped speculum and a concave mirror, of four to five inches focus perforated in its centre, are all the instruments necessary for obtaining a well-defined view of the membrane.

The *Normal* appearance of the membrane is next described. The *colour* is considerably modified by the kind of light used in illuminating. That from a clear sky giving a bluish tint; that from an artificial light more of an orange hue. The former is to be preferred in making examinations.

The chief cause of the "cone of light," he considers to be "the inclination of the membrane to the axis of the auditory canal, together with the concavity of the membrane produced by the manubrium. . . . . In consequence . . . of the inward curvature of the membrane, . . . its parts undergo such a change of inclination that the anterior portion stands at right angles to our axis of vision, and the light thrown upon it is reflected back to the eye," while that from the posterior portion is thrown upon the anterior wall of the canal and does not reach the eye. The normal condition is thus summed up: "At the anterior upper edge of the membrane we see a whitish prominent point, the short process of the malleus; extending from this downward and backward nearly to the centre of the membrane, a whitish or pale-yellow stripe, the malleus handle, widening out at its lower end into the form of a spatula. In front of, and below the manubrium, we see a triangular reflection, the cone of light, its point at the umbo, its base turned forward and downward toward the periphery; the anterior portion of the membrane, lying between the manubrium and cone of light, generally of a darker gray, and seldom visible as far as the periphery; the portion behind the manubrium, more or less distinctly separated from the posterior upper wall of the meatus by a lighter line, and appearing much larger and lighter, and its colour modified in the manner stated, by the promontory and sometimes by the long shank of the incus shining through the membrane, and by the pocket of Trölsch with the *chorda tympani.*"

Anomalies in the transparency and colour of the Membrana Tympani, are divided into two groups: *general* and *circumscribed opacities.*

Among the first are classed—1. "*Softening* or thickening of the epidermic layer." 2. "Diseases of the dermoid layer." 3. "Lack of transparency in the substantia propria." 4. "Opacities and thickening of the mucous layer." These include all the inflammatory changes, calcareous deposits, and fatty degeneration, and their diagnostic significance and value are clearly marked out. These various changes are very interesting, and are of much importance in the study of aural diseases. The following is the summing up of their diagnostic value: "1. Diseases of the membrana tympani are, for the most part, combinations of the signs of diseases of the external and middle, less frequently of the inner ear. 2. Opacities occur frequently in aural disease, according to the unanimous testimony of authors, and in many cases afford important data for a diagnosis. 3. The fact, however, that analogous opacities occur also

in persons with normal hearing, diminishes their diagnostic value not a little. Nevertheless they deserve, in given cases, full consideration; since taken in connection with the other signs, with the nature and course of the case, and the degree of functional impairment, they often essentially facilitate the diagnosis."

Under *anomalies in coherence of the membrana tympani* are considered *perforation* and *rupture*. The former is most generally the result of catarrh of the middle ear; the latter, of external violence. The *cicatrices* that close the perforations when they heal, are always darker than the surrounding membrane, for the reason that they are more transparent and transmit more light than they reflect. The appearance of the *promontory* as seen through perforations is described, and the difficulty in diagnosticating it, sometimes, from a swollen thickened membrane, is confessed.

"*Detachment of the manubrium*," "fracture of the manubrium," of which he has seen one case and relates another, and "*adhesion of the membrane to the stapes*," are all noticed in this chapter; and in a note his treatment of catarrh of the middle ear is detailed in full.

Anomalies in the curvature of the membrana tympani. Of these there are but two—1. The outward bulging or *convexity;* and 2. The inward curvature. The first condition is rare, and is generally due to the accumulation of fluid in the cavity of the tympanum, in catarrh of the middle ear. *Abscesses* make circumscribed convexities as do also *granulations* upon the membrane. The second condition is most generally due to obstruction of the Eustachian tube; the air in the cavity of the tympanum being absorbed, there is diminished resistance to the pressure of the air from without, and hence the sinking in. This is an unfavourable sign as regards a permanent cure, implying as it does, generally, a permanent obstruction in the tube. *Circumscribed depressions* may arise from atrophy of a portion of the membrane, or from a cicatrix, both of which offer diminished resistance to the pressure of the outer air.

In speaking of the *abnormal movements of the membrana tympani* he mentions various methods for testing the movements of the membrane; as the forcing of air into the cavity by the catheter, by the new method of his own, and the method of Valsalva: but no mention is made of the apparatus of Seigle, which we consider is far preferable to any of the other methods. This instrument, as is known, consists of a chamber, one end of which is closed by a double convex lens, and to the other end is attached a conical speculum. In the side of the chamber is an opening to which is attached an elastic tube. To use the instrument, we have only to introduce the speculum into the meatus closely enough to be air-tight; the free end of the tube is then taken into the mouth and the air can be exhausted from the chamber by a sucking action, while the movements of the membrane are watched through the convex lens.

Some remarks respecting the "medical jurisprudence" of injuries to the membrane, we think are very appropriate.

The *Supplement* contains—A. "Accumulation of serum in the tympanic cavity; diagnosis and treatment." B. "Method for preventing the closure of artificial perforations of the membrana tympani." It is often necessary to make these artificial perforations, especially in anchylosis of the ossicles, in order that the sound waves may be transmitted directly to the base of the stapes. Marked improvement has followed in many cases where this treatment has been pursued, and it is considered a justifiable operation. Every method that has been hitherto devised for keeping these perforations open has failed, but Dr. Politzer thinks he has at last hit upon the right one. "The means that I have employed for keeping the artificial perforation open consist in the *introduction of a hard rubber eyelet, having a groove upon its periphery, in which the edges of the perforation lie, thus holding the eyelet fast.*" Minute directions for introducing it are given. C. "Double perforation of the membrana tympani;" and D. "Anatomy of the membrana tympani," containing the results of some of the more recent investigations on the subject.

The chromo-lithographs, twenty-four in number, are accurate representations of the normal and most of the diseased conditions of the membrane.

This is a very interesting and a very valuable work, and we can heartily recommend it to the consideration of those who take an interest in aural surgery.

S. M. B.

ART. XXXV.—*Anatomy, Descriptive and Surgical.* By HENRY GRAY, F.R.S. The Drawings by H. V. CARTER, M. D., with additional drawings in the second and later editions by Dr. WESTMACOTT. The Dissections jointly by the author and Dr. CARTER. With an Introduction on General Anatomy and Development by T. HOLMES, Surgeon to St. George's Hospital. A new American, from the fifth and enlarged English edition. With four hundred and sixty-two engravings on wood. Imp. 8vo. pp. 876. Philadelphia: Henry C. Lea. 1870.

THE new edition of this very valuable treatise is in many respects an improvement upon the editions which have preceded it. Those already familiar with the work will be struck at a glance with the more systematic arrangement of the subjects embraced in it. General Anatomy, for instance, has been isolated from the departments of Descriptive and Surgical Anatomy, with which it had been previously incorporated, and now occupies an important position in an elaborate and instructive introductory chapter of eighty-three pages. Much labour has evidently been expended in the preparation of the very recent English edition, of which this is a transcript, and new cuts and a large amount of matter have been added, to keep this useful work thoroughly up to the requirements of the day, and to preserve its reputation as the best exponent of the present state of anatomical science, which the student can consult. The advantages presented in the method of copious illustration by large cuts, abundantly lettered on the block itself, on the very point of interest described in the text, whether it be process, muscle, tendon, artery, or nerve, have long since been recognized by teacher and student alike, and have contributed largely to the wide-spread popularity which this anatomical text-book has attained on both sides of the Atlantic. R. J. D.

ART. XXXVI.—*Prolapsus, Fistula in Ano, and other Diseases of the Rectum, their Pathology and Treatment.* By T. J. ASHTON, Consulting Physician to the Marylebone Infirmary, etc. etc. Third edition. Crown 8vo. pp. viii., 175. London: John Churchill & Sons. 1870.

THOSE of our readers who are familiar with Mr. Ashton's well-known *Treatise on the Diseases, Injuries, and Malformations of the Rectum, etc.*, which has reached a fourth edition in England and a second in this country, need not to be told that anything from our author's pen upon the important subject of rectal diseases will be full of useful, and practical information.

The present small volume (which, as may be seen from its title page, is itself in its third edition) is designed, as we learn from the preface, to give to busy practitioners "a practical description of those affections of the rectum which by their frequency more constantly claim attention, apart from those of more rare occurrence." After a few pages devoted to introductory remarks, in which our author refers to the wide prevalence of rectal diseases, the importance of the surgeon who undertakes their treatment being not a *specialist* but an accomplished *general* practitioner, and the use of rectal specula, enemata, and perineal douches, Mr. Ashton enters at once upon his subject, considering in succession Prolapsus of the Rectum, Fistula in Ano, Hæmorrhoidal Affections, Fissure of the Rectum, and Malignant Diseases of the Rectum. Mr. Ashton's remarks upon each of these subjects are eminently judicious, and the treatment advised such as the best surgeons of the present day are in the habit of recommending. We know of no volume which gives in such convenient form and in such condensed manner a satisfactory account of the pathology and treatment of the more frequent rectal diseases.

Here we would be glad to stop; but it is our duty to point out to our readers that this whole volume is extracted, almost verbatim, and with but a few trifling additions, from the author's larger work, which was referred to in our opening paragraph. This plan of making two books out of one is convenient, and may be advantageous in a pecuniary point of view, but is scarcely fair to the purchaser, unless it be much more distinctly stated in the preface than is the case in this instance, that the new book is in fact but a part of the old one. As to the *originality* of the old one, we would invite our readers to refer to the Bibliographical Notices of the *second* and *fourth* editions, which appeared in the numbers of this Journal for April, 1858, p. 487, and Jan. 1864, p. 225. We regret to be obliged to say that Mr. Ashton has not profited by the animadversions of our distinguished predecessors in the critical department of this Journal, and gives in the volume now before us even less indication of his obligations to Dr. Bushe's monograph, than in previous issues of his work. Perhaps Mr. Ashton thinks that by having continuously used Dr. Bushe's brains without acknowledgment for sixteen years, he has acquired a right (by what our legal brethren call "prescription") to go on doing so for an indefinite period. J. A., JR.

ART. XXXVII.—*Reports on the Progress of Practical and Scientific Medicine in different parts of the World.* (For the year beginning June 1, 1868, and ending June 1, 1869.) Edited by HORACE DOBELL, M. D., Senior Physician to the Royal Hospital for Diseases of the Chest, &c. &c.; assisted by numerous and distinguished coadjutors. 8vo. pp. 645. London: Longmans, Green, Reader, and Dyer, 1870.

A SECOND series of labourers will soon be required to prepare periodical epitomes of the rapidly multiplying Medical and Surgical Year Books, Abstracts, and Compendiums. The present large volume is, however, constructed on a new basis, the author's somewhat bold and very extensive plan being "to bring together in the English language original and independent reports from all parts of the world, written by distinguished men, resident in the countries which they represent." This method of proceeding will doubtless secure papers much more fresh, full, and attractive, than such as can be furnished by the writers of any one nation. The chief practical difficulty will be found in the great accumulation of material, and in the necessity of repeating many statements of essentially the same character. Dr. Dobell averts, at the outset, any close criticism of this first year's "Reports," by asking his readers to accept it as merely "a fragmentary hostage of the next." It was only in December, 1868, that he designed the work, and the subsequent period was too short for completing the necessary correspondence with remote regions. There is, therefore, a marked disproportion in the scope of the several sections. America is represented by only twenty-two pages, although the author was "particularly desirous" to obtain many more. China and India supply a few notes, the pledges of more numerous ones in subsequent issues. The abstract from Great Britain and Ireland occupies one-third of the volume, and those from Germany and France one-fifth. The last named, from the pen of Prof. Villemin, is particularly valuable. There is an interesting contribution from Iceland, chiefly upon the endemic echinococcus disease; and one from Denmark and Sweden, by Dr. Rasmussen. Heather Bigg presents a complete and very readable account of "Mechanical Appliances, Instruments, and Inventions." The subject of "Climate" receives extended notice in a paper on "Change of Climate in the treatment of Chronic Diseases," and in others having special reference to Minnesota, Riviera, Algeria, and the West Coast of Africa. Articles of considerable length appear to be included in Dr. Dobell's plan, and reference is made to one upon tubercle by Dr. Andrew Clark, which was not ready in time for publication. Nearly all the year's work on this subject has, however, been recounted in the reports from different countries.

Notwithstanding the somewhat disjointed, unsymmetrical, and heterogeneous composition of these "Reports," due, in great part, to the causes already mentioned, they will be found very pleasant and instructive. The editor deserves credit for his energetic enterprise, and a just measure of the real value of the work cannot be made until he and his able collaborators have completed their task according to its original conception. E. R.

ART. XXXVIII.—*A Physician's Problems.* By CHARLES ELAM, M.D., M.R.C.P. 12mo. pp. 400. Boston: Fields, Osgood & Co., 1869.

THE object of Dr. E. is to present in a popular form the results of the most recent investigation of certain matters that deeply concern the happiness and welfare of men. "The book," he says, "is a contribution to the natural history of those outlying regions of thought and action, whose domain is the 'debatable ground' of brain, nerve, and mind." The fruits of modern research are thus made accessible to all, and enter into the common stock of popular knowledge. Books of this kind are among the wants of the time, for the great ends of science are lost so long as its results are confined to journals and treatises devoted exclusively to science, and unknown, of course, to the general mass of readers. Thus, for instance, much has been learned, during the last twenty-five years, respecting the laws of natural heritage, and though this information is of incalculable importance in the due regulation of the social relations, yet it is but little known beyond the pale of the medical profession, and not very extensively there. In performing his task, the author has avoided the common fault of either going above or below the comprehension of the average mind, although in leaving so many of his quotations in the original Latin, Greek, or French, he has presumed too much on the acquisitions of his readers. It is always well to translate for the benefit of the "country members," who, in these days, greatly outnumber all others. He has not always borne in mind the sacred obligation resting upon every scientific writer of strictly verifying his statements of facts. Thus, he states that "of the lunatics confined in asylums in the United States, there are 7520 who have become so entirely owing to this 'spirit-faith.'" This is one of those Munchausen stories, like that which went the rounds of the newspaper press, a year or two ago, of twelve or fifteen hundred young women of the first families in New York applying for admission into the Binghampton Asylum for Inebriates, and that of one-half or more of the inmates of the insane hospitals of France being political prisoners who never had been insane—stories that only enlarge our conceptions of the incalculable extent of human credulity. The truth is, that the inmates of our insane hospitals, all told, little exceed the number of those alleged to have been made insane by spiritual manifestations.

We cannot close this notice without entering our protest against the awkward practice followed by Dr. E. of placing his citations at the end of the book, instead of the bottom of the page. How a writer can deliberately subject his readers to the annoyance of interrupting the course of thought every few minutes, in order to hunt for a citation in some other part of the book, is quite inconceivable.

With these trivial abatements, the book is one which scientific men will find convenient for reference, and which intelligent persons who make no pretension to science will find it profitable to read. Messrs. Fields, Osgood & Co. have done their part by investing it with those attractions of print and paper which characterize all their publications. I. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *On the Functions of the Trachea in the Act of Respiration.*—Some interesting observations on this point by Dr. LEVEN, appear in the just published part of Dr. Brown-Séquard's *Archives de Physiologie*. Dr. Leven remarks that up to the present time most physiologists have regarded the trachea as an inert conduit for the passage of air. Nevertheless, sudden death has occurred on various occasions during the operation of tracheotomy; and fractures of the larynx have frequently induced death, without any exact physiological explanation ever having been advanced. His observations, however, have led him to form certain conclusions to the effect that the trachea is not an inert tube, but that it is intimately associated with the medulla oblongata in its function through the pneumogastric nerves, permitting the passage of air, and therefore, also, the entrance of oxygen, which intermittingly excites the periphery of the pneumogastric nerves, and maintains the medulla oblongata in a constant state of activity. He grounds these conclusions on the facts: 1. That a ligature applied around the trachea which effects a slight constriction of its calibre, instantly retards the respiratory movements. 2. A strong ligature, suddenly applied, so as altogether to occlude the passage of air, stops at once both respiration and circulation; sudden death follows, preceded only by one or two convulsive efforts. 3. It is through the pneumogastric nerves that the impression received by the trachea is conveyed to the medulla. 4. This is proved by the fact that if the pneumogastrics are divided before tying the trachea, the application of the ligature does not produce sudden death. The animal then dies asphyxiated by carbonic acid. 5. Moreover, if after incompletely ligaturing the trachea, the coma of carbonic acid be induced, the respiratory act can still be retarded by tightening the ligature, or may be brought to a sudden stop by occluding the calibre of the tube. 6. These experiments have a direct bearing on various pathological conditions, and upon asphyxia in general, teaching us —7. That we should not confound asphyxia produced by carbonic acid with asphyxia caused by strangulation, nor either of these two with the asphyxia of submersion, since the pathogeny of each is different. 8. Although doubtless the presence of carbonic acid in the blood is superadded as a cause of death, in the asphyxia of strangulation and submersion it is only a subsidiary and secondary cause. 9. Death by hanging is due to compression of the trachea, from the excitation of the pneumogastric, consecutively to irritation of the bulb. 10. Death by drowning is due to the fact that, the trachea no longer receives the oxygen of the air, and hence the pneumogastric is no longer excited; the medulla oblongata consequently remains passive, and life is suspended by the arrest of the circulation and respiration, after the animal has

made three or four respirations, induced by the oxygen still contained in the bronchi. 11. Thus it would appear that the asphyxia produced by hanging and by drowning rather merits the name of syncope, if the distinction between these two clinical terms could be preserved, and if the greater number of supposed cases of asphyxia were not cases of true syncope of a different kind. Asphyxia by hanging is due to an irritation of the bulb; that by drowning to inertia of the bulb.—*Lancet*, March 5, 1870.

2. *Physiology of the Blood.*—In a recent paper by M. SAVOTTI in the *Centralblatt*, he describes a phenomenon of great interest, and hitherto unobserved —the entrance of entire pigment-cells into the channels of the capillaries and smaller veins of the web of the frog's foot through their walls. This is the converse process to that exit of white corpuscles of the blood through the walls of the bloodvessels, which has attracted much attention, and as to which the researches have been brought under the notice of our readers. M. Savotti uses a dilute solution of sulphuric acid—2 per cent. The cells contract and become aggregated around the minute vessels. Then, putting forth processes, one pierces the wall of the vessel and enters its cavity. The whole cell sometimes is slowly drawn in, and after remaining adherent for a time to the wall of the vessel, gradually moves onward with the current of blood. The observation is one of great physiological and pathological interest. It will of course require verification.—*Brit. Med. Journ.*, May 28, 1870.

3. *Regeneration of Nerve-tissue.*—VOIT has recently proved the reproduction of the cerebral tissue in the pigeon, and the coincidence of this reproduction with almost complete renewal of the cephalic functions. MM. Masius and Van Laer, Professors in the University of Liege, deduce from recent experiments—detailed at length in the current number of the *Monthly Microscopical Journal* —that the spinal cord in the frog can recover rapidly a loss of substance which has taken place in its own tissues, and repair its primitive anatomical and physiological properties.—*Brit. Med. Journ.*, May 7, 1870.

MATERIA MEDICA, GENERAL THERAPEUTICS AND PHARMACY.

4. *Physiological Action of Hydrate of Chloral.*—An extensive series of experiments have been instituted by the Medical Officers of the Royal Infirmary, Edinburgh, for the purpose of determining this point; and the conclusion at which they arrived is, that in healthy persons, even after a good night's rest, if the drug be given in doses of twenty to twenty-five grains, in the majority of instances, a condition allied to natural sleep is produced, accompanied by no injurious effects, provided they remain quiet and undisturbed in bed. On the other hand, if moving about, exposed to excitement, or carrying on their usual duties, the same dose, while it occasionally produces a giddy or even slight drowsy sensation, rarely induces a special desire for sleep.—*British Med. Journ.*, April 30, 1870.

Dr. A. M. ADAMS asserts (*Glasgow Med. Jour.*, May, 1870), that chloral lowers the action of the heart and reduces the temperature of the body when such action and temperature are above the standard of health, but in cases of feeble circulation he has found it to act as a gentle stimulant, restoring and equalizing the circulation throughout the outer surfaces of the body and extremities. The breathing is quickened for the first two hours, or thereabouts, after the successful administration of chloral, but it soon falls to what we are accustomed to see in natural sleep. The sleep of chloral is more allied to nature than that induced by any other drug, and comes on with much greater speed and certainty.

Dr. WM. A. HAMMOND regards it as conclusively shown by his experiments on

animals, that "the first effect of the hydrate of chloral is to cause congestion of the cerebral bloodvessels, and that subsequently it induced directly the opposite condition. With a small dose the latter effect is not reached, congestion only being produced."—*N. Y. Med. Journ.*, February, 1870.

Dr. J. Hughes Bennett has been led by his experience to indorse the statement of Liebreich, that chloral causes sleep without exciting the pulse or respiration.—*Practitioner*, May, 1870.

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5. *Chloral as an Hypnotic.*—The Physicians and Surgeons of the Royal Infirmary, Edinburgh, after extensive trials with the hydrate of chloral, have arrived at the conclusion that it is a most important and valuable addition to our list of sedatives and hypnotics. It is, they consider, "perhaps the purest hypnotic and sedative we possess, its administration being followed, in most cases, by beneficial results, and comparatively rarely by injurious effects; also, that for these purposes it may be given with advantage in all cases where sleep is abnormally absent, and in diseases or injuries where any excitement or irritation of the nervous system exists. Its advantages as compared with other narcotics, such as opium, seems to be briefly as follows: 1. It is perhaps more speedy and more certain in its action and more prolonged in its effects; 2. It is less dangerous to children; 3. It is followed, as a rule, by no bad effects; the appetite is not impaired; the tongue is not furred; the excretions are not arrested.

"While in the majority of cases the results of chloral are satisfactory, the fact must not be concealed that, occasionally, unpleasant consequences follow its administration. In upwards of fifty observations, when forty grains were given—the progress of all of which we ourselves had an opportunity of following out—in no less that seven the patients were greatly excited, four of them, in addition, being wildly delirious shortly after taking the medicine. This temporary delirium, although somewhat alarming at the time, passed off in all cases in the course of two hours, accompanied by the most profuse diaphoresis. In this number, about a dozen were afflicted with headache more or less severe, which, however, was also transitory.

"Other observers in the Infirmary, after giving chloral largely, have not met with these distressing symptoms—at least, not to so great an extent."—*British Med. Journ.*, April 30, 1870.

Dr. J. Hughes Bennett states (*Practitioner*, May, 1870) that, in moderate doses, it produces natural sleep; that in a majority of cases it is not a narcotic but pure hypnotic, and that he has not witnessed from it the ill effects so common after the administration of opiates.

Dr. A. M. Adams speaks (*Glasgow Med. Journ.*, May, 1870) in equally favourable terms of its value as an hypnotic. He says "as an hypnotic in affections of the head and nervous system, it dwarfs every other known remedy of its class, and fills a blank in medicine which has long been felt and deplored."

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6. *On the Production of Rapid General Anæsthesia for Short Operations*—Dr. B. W. Richardson made a communication on this subject to the Medical Society of London (March 14, 1870); and at the same time introduced a new anæsthetic compound for that purpose. He began by explaining that, within the past two or three years, a practice had been followed of producing quick insensibility which should be followed by equally quick recovery. Two agents had been employed for this purpose: (*a*) nitrous oxide gas; (*b*) bichloride of methylene. Admitting that the principle of producing quick insensibility had a practical intention and usefulness, Dr. Richardson said he had an objection to the methods which, up to the present time, were adopted for carrying the principle into practice. His objections to nitrous oxide gas were as firm as ever. He held still that the employment of an agent which excluded all atmospheric air during inhalation, which produced the most perfect asphyxia, which required for its administration costly and troublesome apparatus, and which, if administered beyond a given period, even for a few seconds, must of necessity kill, was a bad agent for anæsthetic administration—was, in fact a rude and vulgar process, retrogressive in science. Respecting bichloride of methylene, though

it was hard to speak against any application of a remedy which he, the author, had introduced, he must be candid and say that he was not favourably impressed with the application of bichloride for *quick* general anæsthesia. That it was marvellously rapid in its action was true, that it answered the end had in view was true, and that it had now been used for rapid inhalation an immense number of times was also true; but these facts could not conceal the further and all-important fact that the bichloride of methylene belonged to a dangerous family of chemical substances, and could not therefore be played with without risk. It had been extolled as being safer than chloroform; and that was allowed, for, as it contained an equivalent of chlorine less than chloroform, it was materially safer. But the safety was relative, not absolute. Under these impressions the author was led recently to review experimentally the action of the whole of the more promising anæsthetic fluids and vapours, including chloride of methyl, bichloride of methylene, chloroform, amylene, hydride of methyl, ethylic ether, methylic ether, and some others, which were given on a table placed before the Society. The result was that he had decided in favour of *methylic ether* for rapid anæsthesia. The anæsthetic properties of methylic ether were first discovered by Dr. Richardson in 1867, and the substance has been reported upon by him in two reports to the British Association for the Advancement of Science. On the 20th of May, 1868, he inhaled it for the first time himself. Dr. Sedgwick and Mr. Peter Marshall administered it to him to complete insensibility. He was narcotized completely in one minute, was unconscious in seventy seconds, and recovered almost instantaneously without nausea, headache, or any other unpleasant symptom. From that time the author has been in the habit of narcotizing occasionally with methylic ether, and recently with marked success. The ether is made by digesting one part of pure methylic alcohol with two of strong sulphuric acid. The mixture is heated, and the methylic ether, which passes over as a gas, is subjected to frequent washings in a strong solution of potash. The ether remains as a gas even below zero; it has an ethereal odour; it is chemically an oxide of the radical methyl; and its vapour density is 23, taking hydrogen as unity. The strongest objection to methylic ether is that it is a gas; but, happily, that difficulty is to a large extent overcome, the gas being very soluble in various substances; water takes up 37 volumes of the gas, yielding an ethereal fluid of a very pleasant taste; pure ethylic ether and alcohol take up over 100 volumes, and chloroform and bichloride of methylene nearly as much. For practical purposes, the author prefers absolute ethylic ether of specific gravity 720, and boiling point of 920° Fahr., as the solvent. The ether is charged with the gas at a temperature of 32° Fahr., and the compound is at once bottled and firmly corked down. It should be kept for a time before being used, the process of keeping producing a comparatively stable compound. In using this compound, which he proposes to call methyl-ethylic ether, the author at present employs the simple mouthpiece invented by Mr. Rendle, and made merely of leather. He is adding to this a reserve bag, in order to conserve the ether. From one to two drachms may be put into the inhaler for quick narcotization. Dr. Richardson next described cases in which the methylic ether had been administered to the human subject for the extraction of teeth. In eleven cases, the whole operation, from commencement of the inhalation to the complete recovery, was under three minutes; in several cases, one minute was sufficient; while in two cases forty-five seconds sufficed. In no case was there spasm, syncope, or asphyxia during inhalation, or any after-nausea, and in all cases there was a semi-consciousness, so that the patients did what they were bade to do, remembered what had been done, and yet were not conscious of pain. The author next described the action of methyl-ethylic ether on the nervous centres, comparing it with chloroform and other anæsthetics containing chlorine. He showed that this ether produced no excitation of the nervous centres which supply the vascular system, as chloroform does, and that, consequently, there was absence of muscular spasm, of contraction of bloodvessels, and of syncope from fatal contraction of the heart. When it was carried to the extent of arresting life in the inferior animals, it produced death by paralyzing the organic nervous centres. This extreme result was preceded by convulsive action similar

to that which is seen in death from hemorrhage, the convulsion being due to the absence of arterialized blood in the muscles. So well, however, did the heart retain its power, that in one case, in a lower warm-blooded animal, a guinea-pig, the respiration returned *spontaneously* in pure air, four minutes and forty-five seconds after it had ceased. No fact could more definitely speak in favour of the safety of the agent. In conclusion, the author said that as he had confined himself this time to rapid anæsthesia for short operations, his remarks must be taken as bearing on that subject only. He had introduced methyl-ethylic ether as the readiest and best agent he knew of for the purpose described. It was better than nitrous oxide gas, because it allowed air to be given with it, and did not asphyxiate. It was better than bichloride of methylene, because it did not produce muscular spasm and syncope. At the same time, he did not consider it as perfect, nor should he consider general anæsthesia perfected until he, or some other observer, should discover an agent that will destroy sensibility without interfering at all with organic muscular life, volitional power, or consciousness. Methylic ether approached this perfection, though it did not touch it, and it encouraged perseverance in experimental research. For these reasons it was worth the attention of the Society.—*Lancet*, April 2, 1870.

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7. *Experiments of the Indian Government on the Therapeutic Effects of the Cinchona Alkaloids, Quinia, Quinidinia, Chinchonidinia, and Chinchonia.*—The Medical Commission appointed by the Indian Government to investigate the relative value of the above-named four cinchona alkaloids report favourably, as will be seen from the following extract:—

"It has been shown that the total number of fevers treated by the new alkaloids and chemically pure quinia is 2472, of which only 27 are stated to have failed, and of these no less than 11 were at Labuan. The failures, it will be observed, are but little in excess of one per cent. of the aggregate number treated; which is certainly a most favourable result, especially when it is known that many of the patients were saturated with malaria and ill-fed, as evidenced by their enlarged spleens and emaciated condition."

Opinions differed (as might be expected amongst so large a number of medical men) as to the exact comparative value of the different alkaloids; but the following extract from the general conclusion of the Commission on the subject is interesting.

"Dr. Jackson's experiments extended over no less than 564 cases. 'These alkaloids, are all,' he says, 'possessed of highly antiperiodic properties in malarious fever. They were given in the above number of cases without one fatal termination. It is true that the fever, though generally prevalent among the prisoners, was of a very mild type; the fact, however, remains that the average duration of treatment was about six days [here Dr. Jackson omits to reckon the large number cured by single doses], and such a result can only be accounted for by allowing the very marked specific effects of the alkaloids administered. I much doubt if such a result could be obtained by the administration of any other of the well-known antiperiodics—always excepting the *facile princeps* sulphate of quinia itself.'

"Dr. Fogo writes: 'In small doses all the alkaloids produce the same therapeutical effects—that is, as tonics, antiperiodics, and antineuralgics. Hypodermically and internally, they have proved successful. In large doses they are all equally energetic, and produce their effects rapidly. They have been successfully used as antiperiodics and febrifuges. We have now three alkaloids, in addition to quinia, all of great power. Quinia appears to be the most active and certain in its effects, and, from long-established reputation, it is not likely to be superseded by any of the other alkaloids, at least not until they become more known. In many constitutional peculiarities, when quinia cannot be borne, these alkaloids will be found good substitutes, and they can all be substituted for each other.'

"Most of the medical officers employed in using the alkaloids seem fully impressed with the belief that they are equally, or very nearly, as efficacious as ordinary quinia.

"In regard to the relative effects of the three new alkaloids, and with them chemically pure sulphate of quinia, the evidence derived from their use shows that, with the exception of sulphate of chinchonia, as already stated, they in a remarkable degree so closely resemble each other in therapeutical and physiological action as to render distinctive description of little or no practical utility.

"In reviewing the whole of the operations for testing the therapeutical effects of the chinchona alkaloids, the result confirms generally the favourable opinion expressed by the Commission last year, and likewise conclusively establishes beyond doubt that ordinary sulphate of quinia and sulphate of quinidia possess equal febrifuge power; that sulphate of chinchonidia is only slightly less efficacious; and that sulphate of chinchonia, though considerably inferior to the other alkaloids, is, notwithstanding, a valuable remedial agent in fever.

"There is no longer room to doubt that the alkaloids are capable of being used with the best effects in India" (and elsewhere). "They have been compared with quinia—a drug which possesses more than any other that can be named the confidence of medical practitioners, and have been found by more than the observer to supplement this sovereign remedy in some of its points of deficiency."—*Lancet*, March 19, 1870.

8. *Bromide of Potassium and its Impurities.*—Mr. ARTHUR E. DAVIES has given (*Lancet*, May 21, 1870) the analyses of ten samples of bromide of potassium purchased at different places. These analyses show that bromide of potassium, as generally dispensed, contains a considerable amount of impurity, ranging in the samples which he has examined from 13¾ per cent. to 31 per cent. The impurities consist of chloride and iodide of potassium, sulphate and bromate of potash, and moisture. The chloride of potassium and the sulphate of potash are apparently always present, the former generally in considerable quantity. Bromate of potash, though not always, seems to be very frequently present. The iodide is less commonly met with; it was found in only four of the ten samples which he examined. Caustic and carbonate of potash were not detected in any of the samples.

The impurities referred to appear to be derived from two sources—impurities in the material used, and imperfect carrying out of the process of preparation.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

9. *Pathology of "Morbus Addisonii."*—In the number for February, 1870, of the *Deutsches Archiv für Klinische Medicin*, there is a somewhat elaborate communication, by Dr. RISEL, of *Halle*, on that form of disease attended by a bronze discoloration of the surface, to an acquaintance with which we were first introduced by Dr. Addison, of London, who referred it to a diseased condition of the supra-renal capsules. The communication of Dr. R. embraces a series of very interesting and instructive cases; from the phenomena exhibited during the course of which, and their final result, the writer believes that certain leading propositions are established, not in strict accordance with the views of leading English pathologists.

The effects which are found to result from the extirpation of the supra-renal capsules in experiments made on the lower animals, as well as the histories of a long list of cases occurring in the human subject, with their autopsies after death, establish the fact beyond the possibility of a quibble, that, in man, the disease of the supra-renal capsules, so long as it does not transcend the ordinary pathological limits, not only exerts no disturbing influence on the organism at large, but may occur and run its course without giving rise to any symptoms whatever.

The symptoms, ordinarily described as diagnostic of the "Morbus Addisonii,"

are the result of pathological processes, complicated with others that have taken place in the supra-renal capsules, which are often, it is true, nearly obscured by tubercular deposits, causing disturbed action of the nerves surrounding the arteria cœliaca—of the plexus cœliacus, and of the semilunar ganglion, as also, probably, of the plexus mesentericus superior.

The diseased condition of the solar plexus is manifested chiefly by defective action in its vasomotor fibres, to which is due an overfulness of the vessels of the lower portion of the abdomen, and a corresponding diminished fulness of those above, except only where they border upon their terminal portions. This abnormal distribution of the blood, in proportion to its extent, presents more or less resemblance to the phenomena observed in cases of collapse and of anæmia of the nervous centres. The commencement of symptoms of cerebral anæmia is probably, in some instances, obscured by the previous development of a secondary and but little understood alteration in the blood, and to which is very probably to be assigned the bronzed discoloration of the skin. By far the greater number of the cases of the so-called Addison's disease are, therefore, judging from their usual chronic course, however extensively the supra-renal capsules may be involved, complications of the disease of these bodies with disease of some other organ; the nature and extent of which complications, in each case, may be made out in the progress of the case, or only by an examination after death. D. F. C.

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10. *Nature, Origin, and Treatment of Hysteric Diseases.*—Dr. Robert Lee read an elaborate paper on this subject before the Royal Med. and Chir. Society, (March 8, 1870), in which he gave an accurate report of upwards of two hundred cases. The author drew the following conclusions from these cases. In none did the disease occur before the age of puberty; and in few after the middle period of life. In few of the cases recorded were the functions of the ovum and uterus in a perfectly healthy state. In the greater number, there was amenorrhœa, dysmenorrhœa, menorrhagia, leucorrhœa, or a morbid state of increased or diminished sensibility in the uterine organs, without any organic disease. The author added that, in the greater number, there was incurable sterility; and he stated that he had been led to conclude from the symptoms observed in these cases, that hysteria originates in the ovum, on which menstruation depends, in which conception takes place, and to the influence of which are to be attributed the development of the female pelvis and mammæ, and all the peculiarities of the female constitution. The result of the author's dissections of the renal ganglia and nerves, and those of the ovum, now in the museum of the University at Cambridge, were given; and from them an explanation was advanced of the cause of the discharge of a great quantity of clear urine after the hysteric paroxysms. Other seats of hysteria were then described, with a letter on the subject from Mr. Joseph Swan. The paper concluded with a summary of the different remedies employed in the two hundred cases; the last two of these methods of treatment were clitoridectomy and cutting away the coccyx.

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11. *Convulsive Sneezing, and its Relationship with Migraine, Bronchial Asthma, and Hay-Fever.*—In the *Archiv der Heilkunde*, for 1869, Dr. H. Ferber gives the detailed history of the case of a female who, during childhood, had suffered from occasional attacks of migraine, with vomiting; subsequently she was affected with facial "*tic douloureux*," which was always especially severe at the period of menstruation, which was generally profuse, and also during the later months of pregnancy. The especial seat of the facial pain was in the course of the supra-orbital nerve. In conjunction with the facial pain there were indications of local hyperæmia, injection of the conjunctiva, some œdema of the upper eyelid, with a constant involuntary flow of tears. Upon the decline of the facial pain, the patient experienced severe, uncontrollable paroxysms of sneezing, with a profuse discharge from the nostrils. Subsequently the paroxysms of sneezing recurred, without premonition, as an involuntary convulsive sternutation, almost every morning shortly after rising. Occasionally the patient was affected with eructations, gaping, and asthmatic breathing.

From this case, compared with others of a somewhat similar character upon record, Dr. F. concludes that there exists certainly an absolute *causative* relationship between sternutation and certain disturbances of circulation in the lower pelvis, evidenced in women by anomalous menstruation, and in men by painful hæmorrhoids.

The same relationship exists between certain other affections, which have been also shown to have a near relationship to convulsive sneezing. Especially is this the case with migraine, which in its leading symptoms exhibits this relationship to a considerable extent, as Dr. F. has attempted to show by a careful comparison of the symptomatology of the two. Cases are not unfrequently met with on record where the two diseases occurred simultaneously in the same patient. There is also a peculiar form of bronchial asthma in which almost the same prodromata are to be observed as in cases of convulsive sneezing, the same dryness of the nasal mucous membrane and that of the throat. As in the attack of migraine the paroxysms often terminate upon the occurrence of vomiting, so by the administration of an emetic an attack of convulsive sneezing or of bronchial asthma will be shortened. Dr. F. further shows that the course, symptoms, and etiology of the hay-fever are in accordance with those of the so-called migraine. He therefore concludes that convulsive sneezing is not of itself a special form of disease, but simply a symptom attendant upon any disturbance of action in a certain portion of the nervous system, most probably an irritation of the par vagum nerve, in the same manner as the diseases closely related to it, such as migraine, dry asthma, and hay-fever. Dr. F. supposes that the convulsive expiration through the nostrils is dependent upon a clonic spasm of the bronchial muscles, while in cases of dry asthma the spasm of these muscles is tonic. We cannot follow Dr. F. in his exposition of the physiological deductions upon which he bases his views as above. The connection of the several affections just referred to with the supposed disturbance of the circulation within the pelvis, Dr. F. seeks to explain by a change in the flow of blood through the venous system, causing an accumulation to occur in certain vessels. When this occurs within the nostrils, the vagus nerve is roused by reflected irritation.—*Centralblatt f. d. Med. Wissensch.*, April, 1870. D. F. C.

12. *Remarkable Disturbance of the Heart which occurs in Renal Disease.*—Dr. WILKS brought to the attention of the Clinical Society of London some cases illustrating the remarkable disturbance of the heart which often occurs in renal disease, more especially when this is of the acute form. During the late prevalence of scarlatina, and the succeeding nephritis, he had met with several cases of the kind where the patient was seized with a sudden and violent palpitation of the heart, accompanied by all the usual distresses resulting from disturbance of the heart's action. The same symptoms might be observed in chronic renal disease, but to a less degree. Knowing that acute inflammation of the heart may arise in the course of scarlatina or nephritis, he had always been on the watch for its occurrence, but in the present class of cases the disturbance of the heart's action subsided after a few days without leaving any trace of an inflammatory process; only in one case did death occur. He believed, therefore, that the cardiac disturbance was of nervous origin, and was a symptom of blood poisoning or uræmia. As regarded treatment, Dr. Wilks had seen most of the cases in consultation, and thus different methods had been adopted. In nearly all stimulants had been administered in consequence of the fears of momentary stoppage of the heart's action. Digitalis had certainly been of no avail. In one case, henbane appeared to check the heart's action. His own opinion was, that the condition named being a result of uræmia must be treated after the ordinary manner by diaphoretics, purgatives, etc.—*British Medical Journal*, March 26th, 1870.

13. *Croupal Bronchitis terminating favourably.*—In the February number (1870) of *Deutches Archiv f. Klinische Med.*, Dr. ROTH, of Einerscheim, relates a rather infrequent case of what he denominates *Croupal Bronchitis*, with a spontaneous favourable termination. A small, weakly, anæmic female,

34 years old, regularly menstruating in the intervals of her several pregnancies, suffering from an attack of chronic bronchial catarrh, was attacked, on the last day of July, 1869, with severe fever, loss of appetite, and pain in the head, with much cough. The patient viewed this attack as merely an aggravated paroxysm of her almost habitual catarrhal complaint. She did not confine herself to bed, but, on the contrary, she persisted, notwithstanding the intense dyspnœa, to follow her daily occupations not merely within doors, but abroad in the fields also. Soon, however, the true character of the attack developed itself, and for weeks, every two or three days, the patient was seized with a paroxysm of convulsive cough, and the most intense dyspnœa, amounting to a sense of strangulation, which was only relieved by the discharge, by the cough, of roundish white lumps of fibrinous matter, sometimes discoloured with blood, which left in the mouth a sweetish taste. Placed in water, these lumps became unfolded into a bundle, as it were, of very fine fibrinous bronchial exudations, floating in the midst of the water, varying in size from a tolerably thick cylinder to the finest sewing silk. In the second week this fibrinous discharge, to a greater or less extent, took place two or three times a day, for three consecutive days, then only every second or third day, until, finally, at the termination of three weeks, the discharge ceased entirely; and this without the patient having taken any other medicine than a glassful of infusion of ipecacuanha when first attacked.

The patient recollects that two years previously she had a similar attack, which, after eight days' continuance, also disappeared spontaneously.

A physical exploration, during the disease, and immediately after the expulsion of the fibrinous masses, gave the usual indications of dry bronchitis, with tightness of the respiratory movements, particularly on the left side, while on the right side the respiratory murmur was greatly diminished. The summits of the lungs were fully permeated by the air. D. F. C.

14. *Intermittent Fever Latent for Several Months.*—Dr. W. Braune, in the *Arch. f. Heilkunde*, 1869, relates the cases of eleven persons, visitors at Baden, who had remained on the island during the autumn of 1868, and of whom two were attacked whilst on the island with intermittent fever, but the other nine not until the ensuing spring, some six to nine months subsequently. The patients were all in good circumstances, and resided in different localities—Leipzig, Halle, Liegnitz, Atteburg, etc.—in which localities, at the time the persons referred to were attacked, intermittent fever did not prevail, or only in a few sporadic cases, and neither of the parties had before experienced an attack of the fever. It is evident, therefore, that the disease in all of them was the result of malarial poisoning contracted during the autumn they had remained on the East Freizland Island, where, after a very hot summer, there was experienced a great scarcity of pure water fit for drinking. That a period of incubation of many months, in cases of malarial poisoning, is by no means so rare an occurrence as Griesinger and others have supposed, is proved by observations collected by Pfeiffer in the army of Weimar, and published in the *Jeniaschen Zeitschrift*, 1868. On two occasions—namely, in 1849 and 1867—there occurred among certain divisions of the troops an epidemic of intermittent fever, which in each case must have been due to exposure to malaria during the autumn of the preceding year. D. F. C.

15. *Aphasia.*—Dr. O. Berger (*Wien. Med. Wochenschr.*, 1869) refers to two cases of aphasia, which occurred in a mother and daughter, and in both lasted only a very short time. In the elder female the attack came on suddenly in the evening of a day during which she had suffered from slight symptoms of dyspepsia. With perfect consciousness of the proper word she desired to use, she found herself unable to express it correctly, uttering instead of it sounds the most remote from the word intended. The aphasic attack in the daughter was in all respects similar, being also the result of dyspepsia. Dr. B. refers the aphasia in both these cases to the occurrence of temporary hyperæmia of the brain.—*Centralblatt f. d. Medicin. Wissenschaft.*, April, 1870. D. F. C.

16. *Hemiplegia in Children.*—Dr. FINLAYSON read a paper on this subject before the Manchester Medical Society, February 2, 1870. The following notes indicate the sequence of the symptoms: CASE I. Girl, aged 2. General convulsions were followed by convulsions of the left side, lasting five hours; very complete paralysis of the left limbs and of the left cheek; speech was a little impaired; aspect pallid; treatment by tonics and Faradisation was followed by almost complete recovery in about three months. CASE II. Boy, aged 8. There were coldness and loss of power in the right limbs, with some rigidity of the flexors of the arm; slight paralysis of the right side of the face; the head was slightly bent to the right; slow pulse, but no other cerebral symptoms. He was subsequently reported to have died suddenly from convulsions. CASE III. Girl, aged 7. There was a droop of the left eyelid, followed by choreic tremors, chiefly of the right limbs, and by considerable loss of power on the right side. She had vomiting, diarrhœa (followed afterwards by constipation), headache, and great fretfulness. Subsequently the tongue became protruded to the right, and still later there were inequality of the pupils and left external strabismus. Death occurred apparently from arrest of the respiration. *Autopsy.* A large tumour was found above, slightly in front of the left half of the pons Varolii, with surrounding softening; no tubercles. CASE IV. A girl, aged 2½, had a sudden fall (apparently from a fright); no loss of consciousness; very complete paralysis of the right limbs and right side of the face; speech was lost; intelligence was apparently fair. Her face was flushed, and there was general fever; the paralyzed limbs were warmer than the others. Pulmonary congestion occurred; death in four weeks. *Autopsy.* There was capillary hemorrhage on the brain (with adjacent softening), above and to the left of the left crus of the cerebrum, and lobular pneumonia. CASE V. A boy, aged 4, had languor and feebleness, with slight febricula, for six weeks, followed by loss of power in the right limbs, varying in intensity from time to time; some paralysis of the right side of the face, and protrusion of the tongue to the right. General tuberculosis set in, and death occurred from tubercular meningitis. *Autopsy.* Numerous tubercular granulations (apparently of some standing) were found matted together in the membranes of the brain, chiefly along the margin of the fissure and dipping down into the sulci, and so impinging on the brain-substance; one or two specks of yellow tubercle, however, were found imbedded in the brain-substance, and quite isolated from the membranes. There was a general deposit of recent tubercular granulations in nearly all the organs. CASE VI. Girl, aged 2¼. This case was given for the sake of comparison, although not one of hemiplegia; paralytic symptoms were only noted on the third nerve. The child was first affected with symptoms of atrophy, bronchitis, and diarrhœa, then with discharge of blood and pus from the ear; spots of purpura were next seen, and noma and jaundice appeared before death. Immediately before noma set in (ten days before death), drooping of the left eyelid and dilatation of the left pupil were noted. The pupils became equal, but the droop of the left eyelid, although lessened, persisted till death. *Autopsy.* The left corpus striatum was found much softened; there were tubercular granulations in the lungs; no affection of the petrous bone. Dr. Finlayson remarked on the rarity of true hemiplegia in children, although facial paralysis and common infantile paralysis were, of course, often enough limited to one side. He called attention to a few of the points as worthy of special notice: the choreic symptoms from cerebral tumour; the absence of any loss of consciousness in the case of cerebral softening and capillary hemorrhage; and the protracted course of the case of meningeal tubercle and its giving rise to the unusual symptom of hemiplegia. The softening of the corpus striatum in the last case appeared in the midst of evidences of profound alteration in the nutrition. He regretted that ophthalmoscopic examinations had been neglected.—*Brit. Med. Journ.*, April 30, 1870.

17. *Rupture of the Heart.*—By Dr. J. DE BARY, of *Frankfurt.* Mrs. J., 72 years old, had been suffering for a year from pain in the region of the liver, of a paroxysmal character, which was judged to be due to the presence of biliary concretions in the gall-bladder; was suddenly attacked on the 28th September,

1869, with a deep-seated pain on the left side, beneath the lower angle of the shoulder blade. The face and extremities of the patient became cold, and her surface covered with cold sweat, and difficult respiration. Dr. de B. saw the patient soon after the attack. He could detect nothing abnormal save an irregularity in the cardiac tones, and a remarkable depression of the pulse at the wrist. On the 29th and 30th of September and 1st of October, each day the attack of pain suddenly recurred, with difficulty of breathing, eructations, and a tendency to vomit. These symptoms varied somewhat on different days, and were mostly of short duration. On the 2d of October the patient felt comparatively well. She complained only of difficulty in swallowing, especially of fluids. The pulse was still somewhat weak. There was no longer any pain. The sounds of the heart were regular. This seemingly improved condition of things continued during the 3d and 4th of October, her swallowing having become improved. On the evening of the 4th the patient, sitting up in bed, in the act of swallowing some water, suddenly fell back dead. In a post-mortem examination the pericardium was found greatly distended, containing about a pint of coagulated blood. Near the centre of the posterior wall of the left ventricle there existed an almost transverse rupture with ragged edges, about a finger's breadth long exteriorly, but somewhat less where it entered the ventricle. Around and about the rupture the muscular walls of the ventricle exhibited complete fatty degeneration. The remaining muscles of the heart were nearly in their normal condition. Within the aorta near its commencement there was a thin layer of atheromatous matter. The valves were altogether normal. In the gall-bladder were two biliary concretions of the size, each, of a walnut, firmly grasped by its greatly hypertrophied walls. At the left edge of the liver were two cysts, each of the size of a nut, and filled with a thin uniform fluid. There is little doubt, the relator remarks, that in the above case the rupture of the heart occurred on the 28th of September, showing, consequently, that the patient survived the accident six days.—*Deutsches Archiv f. Klinische Med.*, February, 1870. D. F. C.

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18. *Glycerine-Lymph in Vaccinating.*—Dr. E. Müller, in *V. Horn's Vierteljahrschrift für Gerichtliche Medicin*, 1869, after an historical exposition of variolous inoculation, vaccination, and revaccination, endeavours to point out the cause of the great mortality which still occurs from smallpox, by the large number of the community who are unprotected or only partially protected from the variolous contagion. Hence, on every occurrence of a variolous epidemic, to prevent its spread, all unvaccinated children must be immediately vaccinated, and all older persons revaccinated. The chief difficulty in carrying out with sufficient promptitude these sanitary measures is the scarcity of pure, efficient lymph. According to Dr. M. this scarcity may be in some measure obviated by the dilution of the vaccine lymph with glycerine. He recommends that five portions of lymph be intimately mixed by means of a fine camel's-hair brush with the same quantity of glycerine, that has been reduced by the addition of water to one-half its strength. The lymph thus treated (*glycerine-lymph*) is as effective, Dr. M. assures us, as the lymph ordinarily used, perhaps more so; it has also the advantage of a greater tenacity in its active powers, and hence of being kept for use for a longer period without deterioration, so that on the outbreak of an epidemic of variola a sufficient supply of reliable lymph may be on hand for vaccination and revaccination.—*Centralblatt f. d. Med. Wissensch.*, March 5, 1870. D. F. C.

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19. *Effects of the Secretion of Tears on the Circulation of the Brain.*—Mr. Lund read before the Manchester Medical Society, March 2, 1870, a paper on this subject. He related the case of a lady who, about ten years since, after hearing suddenly of the death of a son, was seized with a violent paroxysm of grief, shed tears profusely, suffered for some days from frontal headache, and great cerebral excitement, and then recovered. Lately, this same patient received news, by letter, of the supposed death of another son abroad. The circumstances were peculiar, and, when the letter was read, while all the family around were greatly affected, it was noticed that, contrary to her usual habit when much

moved, she did not shed a tear. In about two hours afterwards, while sitting at dinner, she suddenly exclaimed, "Oh! my son, I shall never see him again!" and immediately she was seized with right hemiplegia. There were no other form of paralysis, and no aphasia. The total loss of power, with partial loss of sensation, in the right arm and leg remained for nearly five days, after which the paralysis gradually ceased, and, at the end of three weeks, all traces of it were lost. During this time, it was declared by her friends that she was never seen to shed tears. The inference drawn from these facts and from other singular cases referred to was that, on both occasions, under the excitement of intense grief, certain parts of the brain, most probably the thalami and striate bodies, which have been called the *emotional ganglia*, were the seat of vascular congestion; that, on the first occasion, this vascularity was in some way relieved by the secretion of tears, but, on the second attack, the secretion of tears not occurring, the congestion of the ganglia persisted for a certain time, and this state and the paralysis were associated together as cause and effect. It was assumed that one use of intense lachrymation, as an emotional secretion, was to relieve the excessive *intracerebral vascular congestion* of certain parts, which, if allowed to go too far or to be too long sustained, would damage the structures and cause suspension of their functions. The whole subject was illustrated in many ways, and the paper, which was very interesting, caused considerable discussion.—*Brit. Med. Journ.*, April 30, 1870.

20. *Some of the Functional Derangements of the Male Genital Organs.*—Mr. W. F. TEEVAN read a paper on this subject before the Harveian Society (March 3, 1870). 1. *Abnormal erections in children* might occur at the earliest age, and were caused by some local irritation, as very acid urine, gravel, calculus, worms, prolapse of rectum, or cutaneous eruptions. Children who were forced to lie much on their backs, as in hip-joint disease, suffered from erections through the pressure of the urine on the most sensitive part of the bladder. A tight foreskin was a fertile cause of evil, and ought to be removed. 2. *Too frequent nocturnal emissions in young men* often caused much alarm; but the mental anxiety, rather than the seminal loss, was the cause of the depression. Drachm doses of the tincture of sesquichloride of iron would entirely check these emissions. 3. *Nocturnal emissions in married men* were of common occurrence, and arose from debility and irritation, the results of marital excesses. Local applications of mild solutions of the nitrate of silver would be necessary to effect a cure. 4. *Seminal discharges during defecation* took place in most men at some period of their lives, or some prostatic fluid only might be pressed out. When, through indigestion, the semen became attenuated, or there was constipation, the powerful contractions of the levator ani would press out some fluid. Laxatives, &c., would cure these cases. 5. *Diurnal emissions* were of serious import, and might be occasioned through the slightest mental or physical excitement. Suppositories of camphor, belladonna, and opium, were of great use, but a solution of the nitrate of silver would have to be applied to the veru montanum. 6. *True lethargy of the sexual organs* was sometimes observed in powerful young men who had led continent lives, and generally manifested itself as loss of sexual desire. Phosphorus, ergot of rye, cantharides, and strychnia, were indicated in these cases.—*Lancet*, April 23, 1870.

21. *Therapeutic Effects of Chloral in Fever.*—Fever having been prevalent in Edinburgh, an ample field was afforded to the Physicians of the Royal Infirmary for investigating the action of chloral in that disease. "From a large series of observations, it has been ascertained that, although the drug has no direct influence in cutting short or in any way affecting the natural course of the disease, it is a valuable means of assisting and promoting recovery, by its action as a palliative to the numerous distressing symptoms which constantly occur. In doses of thirty grains repeated every hour—two or three times if necessary—in most cases a quiet and refreshing sleep is produced, which serves greatly to maintain the strength of the patient, and to enable him the better to withstand the violence of the disorder; and by thus preventing fatigue and

exhaustion, especially in a weak and feeble constitution, it expedites the recovery and the elimination of the virus. It is found that no injurious effects are produced upon either the digestive or the nervous systems; on the contrary, the appetite is sometimes apparently improved, and the excitement and delirium are frequently diminished. It is also observed, when violent head-symptoms exist, that the ordinary dose should be increased to forty or sixty grains, repeated at intervals, if required, before a sedative effect is obtained. Also, although chloral, under some circumstances, lowers the temperature from half a degree to two degrees, it would appear, from a limited series of observations, that in fever it does not do so, and seems to produce little or no effect as determined by the thermometer. Its action upon the pulse, as ascertained by the sphygmograph, is that of diminishing arterial tension, rendering its quality softer and more regular, but not, apparently, having much effect upon its frequency."—*British Medical Journal*, April 30, 1870.

22. *Therapeutic Effects of Hydrate of Chloral in Cerebral Diseases.*—Dr. T. S. Clousten, Medical Superintendent of the Cumberland and Westmoreland Asylum, thus sums up his experience after having given the hydrate of chloral in forty cases of various forms of *insanity*:—

"1. It has proved a most safe and certain sleep-producer. It seems certain that by it we can compel sleep in any case.

"2. By means of this property, attacks of insanity may probably be warded off in some cases.

"3. Its action in abating and soothing excitement is more uncertain than its sleep-producing power, and lasts a shorter time than that of any signally powerful drug; but it is most valuable in certain cases, especially in some recent and curable ones, where formerly we should have been afraid to give opium. It has no directly curative action, but it evidently could be so employed as to tide over short attacks of insanity, and to prevent certain cases from being sent to lunatic asylums.

"4. Whether it does good or not, it never does harm. In this respect it is the very king of all narcotics.

"5. Its effect on the temperature of the body is variable in different cases, and in the same case at different times; but generally it is to reduce the temperature slightly, taking the average of a number of patients. It differs from opium in this respect, which raises the temperature; but the reduction caused by chloral is not nearly as great in maniacal excitement as that caused by alcohol in large doses.

"6. It should be given to subdue brain excitement in doses beginning at twenty or thirty grains, repeated from three to five hours. To produce sleep in great excitement, from forty to sixty grains are required, the latter dose not failing in one per cent. of the cases."—*Brit. Med. Journal*, May 7, 1870.

Dr. John B. Tuke, Medical Superintendent of the Fife and Kinros District Asylum has employed chloral with good results in acute mania, asthenic insanity, the insomnia of melancholy, and in chronic cases of insanity in which violent outbursts of excitement occurs. "The advantages of chloral," he says "over all other hypnotics with which I am acquainted are—

"1. That it is more uniformly certain in its action.
"2. That it has no depressing influence.
"3. That it does not cause constipation.
"4. That it does not produce nausea.
"5. That its effects are more lasting.

"I believe it to be the most valuable means of procuring sleep which has yet been introduced into the Pharmacopœia of the asylum physician."—*Lancet* March 26, 1870.

Mr. Spencer Wells stated at a meeting of the Obstetrical Society of London, that in a case of furious maniacal excitement seen by him with Dr. Munro, one thirty-grain dose of chloral was followed by almost immediate calm and afterwards sleep.—*Lancet*, April 2, 1870.

Dr. Playfair also reported to the same society a case of threatened puerperal mania where the patient had become maniacal after a previous labour

and after the present one exhibited the same symptoms which had preceded the previous attack, viz: restlessness, inability to sleep, etc. Thirty grains of chloral given at bed time produced a long and quiet sleep, and the same dose was repeated every night for a week. Dr. P. has no doubt that this medicine kept off the threatened attack.

A case of puerperal mania was communicated to the Obstetrical Society of Edinburgh by Dr. THOMPSON, who stated that from his observation in that case he looked forward to chloral being of the greatest service in the acute stage of that disease.—*Edin. Med. Journal*, May, 1870.

Mr. R. G. HILL reports (*Med. Times and Gaz.*, April 9, 1870) a case of acute mania in a female, in which the usual remedies were tried without benefit, when chloral was given with the happiest effects.

Much additional testimony has been adduced as to the value of the hydrate of chloral in *delirium tremens*. According to the experience of the physicians of the Royal Infirmary, Edinburgh, chloral seems in this disease "to be almost a curative agent, as in most cases, notwithstanding violent excitement or delirium, it produces a sound sleep, from which the patient frequently awakes sane and rational. In doses of forty or sixty grains, repeated every half hour three or four times, a deep and lengthened sleep generally ensues. Although there are several exceptions, many most interesting and remarkable cases might be cited to prove the general rule."—*Brit. Med. Journal*, April 30, 1870.

Mr. MAUNDER has employed it successfully at the London Hospital, in a case of furious delirium tremens in a woman. A drachm dose was given, and within half an hour she was fast asleep, all maniacal symptoms being abolished for the time. The dose was repeated with the effect of keeping her quiet, and at the date of the report she seemed quite rational.—*Brit. Med. Journal*, April 2, 1870.

Dr. GEORGE W. BALFOUR has been equally successful with chloral at the Royal Infirmary, Edinburgh. He relates six cases of delirium tremens successfully treated, and says that the cases in his wards "vary from the merely excited fidgety condition, known as the horrors, to the most exaggerated mania, often accompanied by repeated epileptiform convulsions. The cases given are amongst the severer ones treated; the milder ones succumbed more readily to the treatment, one dose being usually sufficient: the general result being to keep the wards almost empty, from the rapidity with which the patients are enabled to be discharged."

Dr. C. A. STIVERS reports (*Pacific Med. and Surg. Journal*, May, 1870) two cases of delirium tremens successfully treated with chloral in the San Francisco Hospital.

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23. *Hydrate of Chloral in Phthisis Pulmonalis.*—For producing sleep, for soothing irritation, and for relieving the painful cough in phthisis, the physicians of the Royal Infirmary, Edinburgh, are satisfied, from many observations, that chloral is most valuable. In doses of twenty or thirty grains it induces a healthy, refreshing sleep without any deleterious accompaniments.—*British Medical Journal*, 1870.

Dr. J. HUGHES BENNETT has found that such is the loss of appetite, increased weakness and emaciation which follow the use of opiates and chlorodyne, he says: "I never give them except in the last stages of the disease, and when, all hope of prolonging life having ceased, we choose the least of evils in procuring even unhealthy sleep. But matters are greatly changed when we are able to obtain the natural sleep that chloral produces. By its aid we can lull irritation, and give rest for a time, in many cases, without any injury whatever. I have recently made special observations on this point in nine cases of phthisis now under my care in the clinical wards, and have collected the experience of some of my colleagues."

He gives a table of these twenty-one cases, in which are shown the lesion in each case, the dose of chloral given and its effects, with some other details, and remarks: "I think it will be admitted that no kind of opiate would have produced such uniformly good, and so few bad results in twenty-one cases of phthisis, as is here shown to have been the effects of chloral. In three cases the individuals slept well habitually, and the remedy only intensified sleep without affecting the head, tongue, or appetite. In one case it caused vomiting twice,

when taken with cod-liver oil, but when dissociated from it produced no ill effect. In one case, in addition to cough and restlessness at night, there was considerable sweating, which was much alleviated by the chloral. To assure myself of this fact, it was given ten nights running, always producing good effects, and when stopped the sweating again increased. In one case it produced excitement and a state approaching delirium, but the dose was thirty grains. In one case the same dose caused slight headache in the morning. In one case also the tongue was more furred afterwards. In all the other cases the relief to the cough and restlessness at night, with the production of sound sleep, was most marked, while the head, tongue, and appetite were in no way affected."—*Practitioner*, May, 1870.

24. *A purely Milk Diet in the Treatment of Diabetes Mellitus, Bright's Disease, Disease of the Supra-renal Capsules, Fatty Degeneration, &c.*—Dr. Arthur Scott Donkin, in an interesting communication (*Lancet*, April 23 and 30, 1870), highly extols a skim-milk diet in the above diseases. "The first appreciable action," he says, "of skim-milk taken to the extent of six or seven pints daily, is that of a most energetic diuretic, a profuse flow of urine being rapidly produced. The effect of this, in Bright's disease, is to *flush* the uriniferous tubules, and to dislodge and wash out the concrete casts of diseased epithelial cells by which they are blocked up and distended. This emptying of the tubules relieves their pressure on the surrounding *secondary* capillaries; the blood begins to flow more freely through them: the distension of the *primary* Malpighian capillaries is relieved, less and less albumen escapes through their walls until the renal circulation is gradually restored, when it finally disappears from the urine. While this beneficial change is progressing, healthy epithelium is developed in the tubules, and the urinary excrement is withdrawn from the blood. In short, a healthy nutrition becomes re-established in the kidneys through the agency of milk, which, above all other substances, seems to exercise a controlling influence over this process—so much so that Dr. Karell, in the valuable contribution already referred to, in endeavouring to explain its curative power over many diseased conditions, calls it a 'regulator of nutrition.'

"The administration of milk causes the immediate absorption into the blood of a large quantity of albumen in a condition specially prepared in the laboratory of nature for assimilation and nutrition, as well as every other substance requisite to nourish the body. Consequently, in the disease under consideration, it quickly restores the lost albumen to the blood, and removes its hydræmic condition; the specific gravity of the serum is soon raised to a healthy standard, and the deficient red corpuscles are replaced. Under these circumstances the dropsical effusion is rapidly absorbed. Milk, then, does not merely remove the dropsy by simply withdrawing a large quantity from the kidneys, as is done by ordinary diuretics, but, in addition, it prevents its *return* by restoring the healthy condition of the blood, and this, too, with a rapidity which cannot be effected by any other remedies.

"It would be absurd to contend that cases of chronic parenchymatous nephritis so far advanced that the destruction to the kidneys is irreparable can be cured. Nevertheless two of the cases which I have recorded, as well as several others which have come under my observation, convince me that most cases, in which the second stage is not too far advanced and the disease not complicated with others of a fatal character, can be cured by the treatment I have indicated."

Skim-milk, Dr. D. thinks is more efficacious than the water treatment recommended by Dr. Dickinson, for the reason that water cannot replace the deficient albumen of the blood-serum nor the materials for the development of red corpuscles.

"I have very seldom," says Dr. Donkin, "found the skim-milk disagree with my patients, and never known it produce diarrhœa. On the contrary, it generally induces constipation—a symptom which, though it frequently requires to be remedied by a mild laxative, I now regard as a certain indication that the milk is agreeing with the patient, and producing the beneficial operation for which it has been prescribed.

"The milk may be given warm or cold, according to the inclination of the patient; it must not, however, be boiled, as a temperature of 212°, I feel certain, either seriously impairs or altogether destroys its therapeutic energy, possibly by altering the molecular arrangement of its casein, or by destroying some vital agency with which it is endowed. As to the time of administration, it may be given in four meals daily, with an interval of four hours between each; or it may be taken at shorter intervals and in smaller quantities, but in such a way that six or seven pints are consumed by an adult in the course of twenty-four hours. Should the stomach be delicate, or digestion impaired, or should chronic vomiting exist, the treatment must be begun by giving one or two pints, or even less, in small divided doses during the first day, the quantity being gradually increased from day to day until the requisite amount is reached. In cases of chronic vomiting, bismuth may be prescribed at the same time with advantage, as well as such other remedies as may be indicated by the nature of the case. Should these precautions be taken, no difficulty or inconvenience will be experienced.

"I must further add that the cream must be carefully skimmed from the milk, which, for this purpose, should previously stand twenty-four hours, when the weather will permit. The cream, in consequence of the butter which it contains, most certainly acts injuriously in the chronic affections amenable to this treatment; besides, it has a strong tendency, when taken in large quantities, to disorder the stomach. In diabetes it is most injurious.

"I have had but one opportunity of treating a case of *disease of the supra-renal capsules* with a skim-milk diet, and with a result which I consider well worthy of being recorded. The appellation of 'supra-renal asthenia,' given to this remarkable affection by Jaccoud in his valuable essay on the subject,[1] is certainly appropriate, inasmuch as the characteristic asthenic cachexia invariably attending its progress is, as he justly terms it, 'une asthénie croissant jusqu'à la mort.' The case to which I refer is, I believe, the only one in which a recovery has been effected after the symptoms of the malady were unequivocally developed."

Dr. D. speaks favourably also of the effect of skim-milk in fatty degeneration and obesity. "Skim-milk affords no pabulum for the development or nutrition of fat, existing abnormally in diseased muscular fibre or in adipose tissue in cases of obesity. An exclusively skim-milk diet will there be found, in cases of polysarcia and of diseased tissue often associated with it, to be a much more potent and agreeable remedy than the system termed Bantingism.

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25. *Lactic Acid in Croup.*—Dr. WAGNER, in a recent number of the *Jahrbuch für Kinderheilkunde*, states, in disproval of the value of lactic acid in cases of croup as a remedy, for which it has been recommended, that he prescribed it in a case of diphtheritis of the tonsils which had passed into laryngeal croup. The utmost care was taken in conducting the inhalations of lactic acid—commencing with 15½ drops to one ounce of water—but without any beneficial result. As little benefit was obtained in severe cases of laryngeal croup, preceded by pharyngeal diphtheritis, from the use of lime-water, also highly spoken of as a remedy in croup. It is very probable, however, that both these articles will be found more successful in even severe diphtheritic cases, so long as the disease is strictly confined to the throat.—*Centralblatt f. d. Med. Wissensch.*, March 26, 1870. D. F. C.

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26. *Belladonna as a Remedy for Constipation.*—Dr. F. B. NUNNELEY has been in the habit of giving to the patients at York Dispensary who suffered from constipation extract of belladonna, as recommended by Trousseau, in doses of gr. ⅛ to ⅜ on rising every morning. A grain of the extract with three grains of the extract of gentian were made into six pills, and one to four prescribed for a dose. "Belladonna in the usual dose," he says, "of gr. ⅛ to gr. ½ produced no dryness of the throat, or dilatation of the pupil, but presented the following advantages over ordinary purgatives: It did not gripe but gave

[1] Nouveau Dictionnaire de Médecine et de Chirurgie Pratique, tome v. p. 804.

usually a healthy solid stool, increased constipation did not follow its use, and it very often restored the natural action of the bowels, so as to render a recurrence to this or other aperient unnecessary. Another and important advantage is the small bulk in which the remedy can be given.—*Practitioner*," April, 1870.

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27. *Itch treated by Balsam of Peru.*—Balsam of Peru is claimed to be an effectual remedy for itch. The treatment is as follows: The patient is stripped and well and carefully rubbed over with Peru balsam from crown to heel, avoiding the production of abrasions. It soaks into the galleries and eggs, and kills everything on the body within an hour. A second rubbing, ten days after, destroys any stray animalculæ or products of eggs that may by chance have been in the clothes at the first rubbing, and thus does away with any need for baking or otherwise disinfecting the clothing.—*Edinb. Med. Journ.*, May, 1870.

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28. *Use of Sarsaparilla in Syphilis.*—Dr. T. Clifford Allbutt states (*Practitioner*, May, 1870) that the antisyphilitic effects of sarsaparilla depend upon the dose in which it is given, and that given in adequate doses it is one of our best remedies. It has been used in the Leeds Infirmary for at least a quarter of a century, in the form of decoction, and it is made there in large quantities. "Of this decoction, which differs only in unimportant details from the compound decoction of the Pharmacopœia, we administer from four to ten ounces three times a day, or prescribe some such quantity as a pint or a pint and a half to be taken at will during the twenty-four hours. This medication is expensive, no doubt, but that treatment is the cheapest which most quickly cures the patient. The cases in which sarsaparilla is most useful are cases in which the system is thoroughly infected with syphilis, during the tertiary and visceral modes of its appearances.

"In persons who are in a thoroughly cachectic state, who have lost flesh and strength, and who are suffering from sluggish ulcerations and indolent gummata, the sarsaparilla is really of very great value. I believe there is scarcely a practitioner among my readers who will not rejoice to hear of a remedy which will help him to cleanse and to re-establish old syphilitic patients—patients whose constitutions have been undermined by want of nourishment or by excesses, who have gone through many courses of mercury, whose irritable mucous membranes will not bear any more iodide of potassium, and who are so sallow, so worn, so broken down, so eaten up by disease as to seem fit only for the grave. These persons clear up on such quantities of sarsaparilla as I have named, and it is here that the drug fills so important a gap. It need not, and it will not, supersede mercury and iodide of potassium in straightforward cases, but it has its place where these means have failed, or where they are on some grounds to be avoided. How far we are right in claiming this important place for sarsaparilla can only be known after an extended use of the drug according to our method by the profession at large."

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29. *Subnitrate of Bismuth in the Diarrhœa of Young Children.*—Heller, in the *Deutsches Archiv für Klinische Medicin*, vol. vi., recommends, in the treatment of the diarrhœa of early life, the subnitrate of bismuth to the extent of from thirty to sixty grains. In the commencement, Dr. H. gives a dose of the remedy every hour until the diarrhœa was arrested, which usually occurred at the end of twenty-four hours. He has never seen any bad result from the use of the remedy. During the continuance of the diarrhœa the patient is to be debarred the use of milk. D. F. C.

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30. *Local Paralysis successfully treated by Hypodermic Injection of Strychnia.*—Mr. Barwell read an account of a case of this before the Clinical Society of London, April 8, 1870. The patient, a tailor, æt. 58, had lost the use of the extensors and supinators of the right forearm fifteen weeks before coming under Mr. Barwell's notice. The condition resembled painters' wrist-drop; but there was no sign of lead-poisoning; the muscles were not appreciably shrivelled, nor did they respond to faradisation. On December 6, 1869, Mr. Barwell injected hypodermically 3½ minims of a solution of strychnia, said

to contain 1 grain in 50 minims—*i. e.*, 0.07 of a grain. On the 13th he injected 5 minims—*i. e.*, 0.1 of a grain. Each injection was followed by marked increase of power. An interval of seven days occurred, and during that time the patient remained in the same state as two days after the second injection. On the 30th, 6 minims—0.12 of a grain—were injected, and three days afterwards the patient had quite recovered. An interesting discussion was maintained regarding the strength of the solution and the asserted unusual magnitude of the dose. Mr. Barwell affirmed that the concentrated state of the solution was the condition which made the dose safe. It was pointed out, however, that the solution was not of the strength stated, as, from its mode of preparation, a proportion of the strychnia would be precipitated. The solution was accordingly referred to a committee consisting of Mr. Barwell, Dr. J. Burdon Sanderson, and Dr. John Harley.

This committee reported on the 22d April that the substance soluble in chloroform amounted in percentage rate to the quantity of strychnia stated to exist in the solution. A further investigation was thought to be required.—*Brit. Med. Journal*, April 30, and *Med. Times & Gaz.*, June 4, 1870.

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31. *Phenic Acid in the Treatment of Smallpox.*—M. CHAUFFARD, of Cochin Hospital, has employed phenic or carbolic acid in the treatment of smallpox, and stated at a meeting of the Société Med. des Hôpitaux with excellent results. He administers it internally in the dose of one gramme daily in a draught of from 125 to 150 grammes, and applies lotions of it externally of the strength of 1 in 50 or 100 parts of water. Dr. C. resorts to this treatment on the very first appearance of the eruption, and asserts that the severe fever and attendant effects of suppuration abated and ceased rapidly. It was particularly efficacious also in the secondary fever of severe confluent variola. Drs. Douillard and Martinelli also extol the remedy warmly, and report cases in which it was eminently useful. Other practitioners do not report so favourably of it, but enough evidence has been adduced to claim a further trial for it.

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32. *The Use of Hydrate of Chloral as a Remedy in Epilepsy.*—Dr. WEIDENER, of Jena, relates an interesting case of a lad, 19 years old, a gardener by occupation, who, since his sixteenth year, had been the subject of epileptic attacks. The fits, according to the patient's account, occurred at irregular intervals. Occasionally they would recur two days consecutively, in other cases not until after the lapse of several weeks. The countenance of the patient exhibited an expression of terror or affright. There was from time to time a rapid alternation in the temperature of the surface. Each epileptic paroxysm was ushered in by an *aura* of short duration, resembling a rush of cool air along the entire extent of the spine. Shortly after, the patient, with a loud shriek, was seized with epileptiform convulsions, which held him apparently breathless for some five to ten minutes. With almost every paroxysm the tongue was bitten; after the convulsions had subsided, there was observable a number of punctated ecchymoses over the eyebrows. During the intervals there would often be experienced, suddenly, convulsive movements of the muscles of the upper extremities and, also, often of the lower extremities. Physical excitement would often give rise to repeated convulsive distortions of the lips.

The father of the patient, it was ascertained, had suffered from epilepsy up to his twenty-seventh year; a brother, twenty-five years old, had been epileptic since his eighteenth year; and another brother, thirteen years old, since his ninth year.

A careful examination of the patient proved that nothing abnormal was to be detected in either of the organs of the chest, abdomen, or pelvis. The skull was symmetrical in shape, and of a smooth, even surface. Neither cicatrix, tumour, nor other mark of injury could be detected on any part of the body.

The fits, instead of remaining irregular in their occurrence, as at first, became, subsequently, somewhat periodical, recurring, every seventh day, always at the same hour—between three and four o'clock A. M. The patient then awoke with a sense of difficulty of respiration, great anxiety, with confusion of mind; after

uttering a loud scream or two, within the course of five or ten minutes, he was seized with a violent paroxysm of epileptic convulsions.

On Friday, November 12th, about one o'clock A. M., some two hours preceding the anticipated paroxysm, a dose (45 grm.) of the hydrate of chloral was taken by the patient. About fifteen minutes after taking it he fell asleep. Between three and four o'clock the respiration of the patient was regular—about fifteen respirations to the minute. He awoke at seven o'clock A. M., without headache, or any other of the ordinary symptoms of the epileptic attack. On each of the two succeeding Fridays (Nov. 19–26), and at the same hour, he took the same quantity of the chloral, and with the same result. No paroxysm had now occurred for a space of three weeks. From the 15th of November the patient had been placed under the use of bromide of potassium in large doses.

Dr. Weidener remarks, January, 1870, that on a close examination of the patient he could discover no remaining symptom of an epileptic character, he, therefore, believes himself justified in presenting the case as a fair example of the beneficial results that may be anticipated from the administration of hydrate of chloral a short time preceding the expected occurrence of the epileptic paroxysm.—*Deutsches Archiv f. Klinische Med.*, Feb. 1870. D. F. C.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

33. *Conditions which favour Secondary Hemorrhages after Surgical Operations.*—M. Verneuil exhibited to the Imperial Society of Surgery (Paris) a specimen derived from a patient who had died from secondary hemorrhage subsequent to ligature of the external carotid artery, which operation had been performed preparatory to excision of the lower jaw for osteosarcoma. At the autopsy all the viscera were found healthy except the liver. This organ had undergone an alteration which, after careful microscopic examination, M. V., with the concurrence of MM. Vulpian, Cornil, and Ranvier, designated as diffuse miliary hepatitis. The patient died from accidental hemorrhage; had he lived longer he would have died of disease of the liver. It may be asked what influence had this hepatic alteration on the production of the secondary hemorrhage. On comparing the result in this case with the results arrived at by Monneret in his researches on the diseases of the liver which show the important part which hepatic disease plays in the production of spontaneous hemorrhages, M. V. does not hesitate to ascribe the occurrence of secondary hemorrhage in his case to the hepatic disorder; and he calls anew the attention of the profession to this point of etiology, still so obscure, of consecutive hemorrhages which follow traumatic lesions or surgical operations.

M. Demarquay stated that he had often observed secondary hemorrhages in persons affected with disease of the liver. He had at this time a patient suffering from phlegmon of the parotid with cirrhosis of the liver, who had frequent attacks of epistaxis.—*L'Union Médicale*, March 24, 1870.

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34. *Some Points in the Pathology of Tetanus.*—M. Verneuil, in commenting on a case of tetanus reported to the Surgical Society of Paris, called attention to the following points, which seem worthy of notice:—

1st. That the increase of general temperature in tetanus should not be ascribed to the general muscular spasms which have hitherto been considered as the sole cause of that phenomenon, but that it results solely from the excitation of the spinal cord.

2d. That the grave nature of tetanus depends less upon the number of muscles affected than upon the functional importance of those muscles. If the spasms affect only the laryngeal muscles the case must be considered as very serious; for there is then danger of asphyxia being caused, and therefore the

condition of the respiration in tetanus affords to some extent a means of prognosis.—*L'Union Médicale*, May 21, 1870.

35. *Etiology of Erysipelas from Wounds.*—Dr. KOENIG (*Deutches Arch. d. Heilkunde*, 1869) observed that during a slight epidemic of erysipelas which occurred in the Rostock Clinic, only the fresh wounds made in operations were attacked, and of these only such as were performed in the operating theatre. Operations performed upon patients whilst lying on their beds in the wards were not followed by the disease, and persons brought into the clinic in consequence of wounds inflicted outside of the Institution were also exempt. These facts led to the suspicion that the disease was the result of a poisoning of the blood by a virus generated and introduced by the interrupted suture employed for closing wounds. The stitches were immediately removed in all cases in which they had been employed and their use abandoned in all new cases. From that time forward no new case of erysipelas occurred.

Erysipelas Dr. K. holds to be the result of a specific virus for the development of which the dried blood allowed to remain about recent wounds is a favourable nidus. The old observation he considers to have been a true one; namely, that erysipelas often occurs spontaneously in a wound, in consequence of blood being retained between its edges.

The so-called "medical" erysipelas Dr. K. believes to be identical with that from wounds. Of thirty-three cases of what was set down as non-traumatic erysipelas, in nineteen slight wounds were detected as the starting-point of the disease. In other cases similar wounds might, possibly, have existed, but the swelling was too great to admit of a search being made for them. D. F. C.

36. *Reproduction and Reunion of Divided Tendons.*—The following are the conclusions of an elaborate memoir on this subject read before the Imperial Academy of Sciences by M. DEMARQUAY. The results of his investigations show. 1. That tendon is regenerated by proliferation of the elements which are found at the internal surface of the sheath of the divided tendon, its two ends being retracted. 2. That the external portion of the sheath takes no part in the process, except that the vessels which it supports become more voluminous and more numerous. 3. The proliferation which takes place at the inner surface of the sheath does so at the expense of the cellular elements of the latter, which, at the end of eight or ten days, becomes confounded with the cellular elements which spring from the extremity of the divided tendon. 4. The regeneration of the tendon is rapid in proportion to the vascularity of the divided tendon. Thus, while the tendo Achillis is repaired in twenty or twenty-five days, the tendo patellæ requires a longer time. 5. The phenomena which lead to the reproduction of tendons are in every respect similar to those which occur in the reproduction of bone by the periosteum. 6. Histological examinations have confirmed the deductions from physiological experiments. 7. In this memoir further illustrations are derived from facts in pathological anatomy, and the subject of the suture of tendons is clinically and experimentally examined. The general result, derived from observations made on man and animals, is that sutures of divided tendons do not give rise to satisfactory results except when they are executed by means of very fine needles and very thin threads, when union takes place by means of the proliferation of the cellular elements, and when a considerable length of time has elapsed.

37. *Hydatids in Bone.*—At a meeting of the Berlin Medical Society, Dr. KUSTER related, with full details, a case of echinococci in bone. The patient was a labourer of twenty-two, who fractured his humerus, about the middle of the shaft, when twelve years old; good union took place. About ten years afterwards he was knocked down by a bull, and suffered a fracture of the same bone just above the condyles. A plaster-of-Paris apparatus proved of no avail, a second was not more successful, and he was sent to the hospital. The surgeons at first considered that the former bandages had not been sufficiently tight; rubbing of the ends of the fragments was effected, and the arm and shoulder well secured. This first dressing turned out fruitless, as also did two

subsequent ones; and Dr. Wilms, who had charge of the case, resolved to use ivory pegs. The gimlet, with the slightest effort, sank freely into the bone, and *pus* issued from the opening thus made. The idea of inserting pegs was therefore given up, and the arm kept quiet. Feverishness and severe swelling ensued, and Dr. Küster was obliged to make two lateral incisions, which freed some pus and peculiar-looking membranous shreds. These turned out to be portions of hydatid cysts. A drainage tube was then inserted, and on each dressing vesicles of echinococci were discharged, varying in size from a flax-seed to a goose's egg. This escape of hydatids lasted about four weeks, when both echinococci and pus disappeared. The limb was now attacked with erysipelas, at the termination of which the ends of the fragments remained bathed in a sanious fluid. Soon afterwards the elbow-joint inflamed, and unmistakable symptoms of pyæmia set in. Dr. Küster now disarticulated the limb at the shoulder-joint. On an examination of the part, an extensive purulent infiltration of the intermuscular cellular tissue, up to the shoulder, was discovered. A large sac, full of pus, surrounded the ends of the ununited fragments. In this pus, cysts, varying in size from that of a cherry to a nut, floated about. In the surrounding muscles about twenty small cysts were detected, some the size of a pin's head, others as large as peas, and everywhere a communication with the principal purulent sac could be made out. The author states that no case of hydatids in *muscles* have been recorded since Dupuytren observed them in a case of hydatids of the humerus. On making a longitudinal section of the bone, the medullary substance was found to have been destroyed, a complete vacuum being observed in its stead. Such a case shows plainly how we may be far from the mark when we attribute non-union to some defect in the constitution, to malposition, to imperfect treatment, to a piece of membrane or muscle between the fragments, &c. &c. Dr. Küster has taken the trouble to collect the cases of a similar nature scattered in books and periodicals. He finds only 21 or 22, one case being doubtful. Tibia, 5; cranium, 4 (1 doubtful); spinal column, 3; pelvis, 3; humerus, 3; femur, 2; phalanx of finger, 1. In 5 there was fracture; non-union of course ensued, but there had mostly been some swelling of the bone, which broke on the slightest provocation. In most cases there were no symptoms leading to the suspicion of hydatids. The case of Messrs. Dickenson and Crompton is quoted (where is it consigned?) where a girl broke her humerus by a fall on the staircase; non-union was treated by a seton, and the pus contained hydatids. (Could not the latter have been found in the pus independently of the fracture?)—*Lancet*, May 21, from *Med. Centr. Zeitung*, April 22d, 1870.

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38. *Recovery from Pyæmia.*—The fatality of pyæmia is so great that every case of recovery is worth recording. M. Gosselin has observed two, Broca four, Verneuil one; one was communicated to the College of Physicians of Philadelphia by Dr. Hutchinson; two other fellows of the college stated that they had each observed two (see preceding number of this Journal, p. 398 et seq.), and in the number of the *Edinburgh Medical Journal* for January, 1870, Dr. Joseph Bell has recorded three cases. In the treatment of his three cases, Dr. Bell states: "I directed my attention not to any hopes of finding antidotes, or chemically acting on the poison. I gave no alternatives, no specifics, no mercury, but simply aimed at, 1st, keeping the primæ viæ in such a state as best might aid assimilation of nourishment; and, 2d, giving the nourishment in such a form as most easily might be taken up.

"Milk, with lime-water, eggs, beef-tea, at short intervals, and in small quantity, were the chief remedies; an occasional purgative enema, or even a purge of castor oil when required, and really very little else. Case I., from his excessive weakness, had for some days ℥viij of port, and ℥iv of brandy; but this was soon diminished. Case II. got quinia, but could not bear it; at least his appetite diminished under its use, and I had to stop it. Case III. had hardly any drug whatever during his whole long illness. I have more than once (in other cases, never in these ones) tried the internal use of the sulphites, as recommended by Dr. Polli, but cannot say that I have ever seen any benefit result.

Indeed, their effect on the patient's appetite was generally so bad, as very speedily to cause them to be given up.

"Hot drinks, not necessarily containing alcoholics, even hot water, or hot milk-and-water, were found very useful in preventing rigors, which a cold drink would inevitably have hastened. I have been led to lay great stress on the importance of delaying the dressing of the patient's wounds, when his skin is moist, or he feels a rigor to be imminent, and selecting such times as he himself will soon learn to recognize as the most suitable, as involving the least risk of chill.

"I must conclude by adding, that no case will ever recover from pyæmia, without the most careful and devoted nursing."

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39. *Chloral in Tetanus.*—M. VERNEUIL lately reported to the Imperial Society of Surgery a severe case of tetanus cured by chloral, and another not less severe was soon after reported to the same society by Messrs. Dubreuil, Lavaux, and Onimus, successfully treated by the same article combined with continuous electric currents, a fourth case, also successful, was communicated by Dr. Dufour, Assistant Physician to the Ophthalmic Hospital of Lausanne.

Two cases of failure have likewise been reported to the same society, one occurring in the practice of M. Guyon and the other in that of M. Le Fort. M. Guyon stated that in the case reported by him chloral afforded relief, though only temporary. Each time it was given it afforded ease to the patient and produced sleep, and he thinks that if chloral be not a specific and heroic remedy for tetanus, it is at least a useful adjuvant used concurrently with other means as sudorifics, electric currents, etc.

In M. Le Fort's case chloral also afforded relief though it failed to effect a cure. M. Verneuil, in commenting upon this case, called attention to the important fact shown by it, which is that chloral has undoubted powers of arresting contractions of the exterior muscles, but unfortunately fails to arrest those of the respiratory ones, which it is most important to restore to their regular functions; and it is to this last circumstance the failure of chloral seems due. It is therefore necessary to join to chloral, the utility of which is incontestable, some other means which shall exert a special influence on the contractions of the respiratory muscles. This means M. Verneuil thinks is the continuous electric current, which possesses the positive power of arresting the spasm of the respiratory muscles, and thus preventing asphyxia, as in the case of MM. Dubreuil, Lavaux, and Onimus.—*L'Union Méd.*, May 21, 1870.

Mr. TAY, Assistant Surgeon to the London Hospital, reports (*Brit. Med. Journal*, April 2, 1870) a case of tetanus, in a woman forty years of age, treated by chloral unsuccessfully, but life seemed to be prolonged by the remedy and it clearly produced certain definite effects. It was given in doses of a drachm by the mouth and two drachms by the rectum, relieving the patient from the agonies of impending suffocation caused by tetanic spasm, and causing calm sleep and muscular relaxation.

Another case is recorded (*Brit. Med. Journal*, April 2, 1870) by Mr. E. R. DENTON, in which recovery took place. The subject of it was a boy, æt. 18, the disease resulting from an injury. Mr. D. says, "The severity of the symptoms during the first week led me to form a very unfavourable prognosis, but the steady improvement after the administration of the hydrate of chloral, assisted by the bromide of potassium and that of belladonna, leads me to hope that in them we have agents which, in some instances at least, may be found efficacious in combating so frightful a disease."

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40. *Use of Hydrate of Chloral for the Relief of Pain in Cancer.*—Mr. F. E. CLARKE extols (*Lancet*, April 16, 1870) chloral as a palliative in malignant disease. He regards it as the best palliative in cancer for alleviating pain, and by its beneficial effects it enables the constitution to hold out longer against the ravages of the diseases, and "thereby afford a much greater chance of spontaneous cure, rare instances of which occur by the sloughing of the entire mass."

Mr. WEEDEN COOKE, Surgeon to the Cancer Hospital also bears strong testi-

mony (*Lancet*, April 30, 1870) to the value of chloral for the relief of pain in cancer and its superiority over other means hitherto employed for that purpose. As a night draught he has found twenty grains quite sufficient, but when the pain is persistent, ten-grain doses three times a day give the greatest satisfaction. There is no headache, no sickness, no loss of appetite, nothing to hinder the patient taking exercise, and, so far as the disease will permit, pursuing his usual avocations.

Dr. C. C. Cooke states (*Lancet*, March 19, 1870) that a patient of his suffering from cancer of the uterus has found more relief from pain and obtained more sleep since taking chloral than she had done from any other remedy.

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41. *Chloral for the Relief of the severe Pain of Burns.*—M. Marjolin stated to the Imperial Society of Surgery that he had administered the hydrate of chloral internally to relieve the severe pain from burns, and with complete relief to the patient. When the chloral is vomited he gives it by injection per rectum in the dose, of 0.50 centigrammes.—*L'Union Médicale*, May 19, 1870.

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42. *Hydrate of Chloral for the Relief of the Pain from Surgical Injuries.*—According to the experience of the surgeons of the Royal Infirmary, Edinburgh: "In many surgical injuries, when great pain is experienced, it is generally the means, in doses of thirty or forty grains, of diminishing the suffering without of necessity causing hypnotism; but if the dose is increased, sleep is produced. After severe accidents or capital operations, similar beneficial results, in most instances, follow its administration."—*Brit. Med. Journal*, April 30, 1870.

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43. *Indications for, and Results of, Trephining.*—Baron Larrey, from an analysis of one hundred and sixty cranial lesions, draws the conclusions that trephining should be reserved for certain well-defined cases where the indications are perfectly clear, whilst they should not be undertaken precipitately or under doubtful circumstances, lest the already present conditions be aggravated and the fatal termination hastened; and this is the more strenuously urged, because he thinks the prompt and rational application of other remedial means can in many instances materially aid the resources of nature, even in injuries of the gravest character.

The indications for trephining Baron Larrey shortly tabulates as follows: 1. Trephining should be performed in fractures of the vault of the cranium produced either by simple penetration to a greater or less depth, or complicated by the driving in of fragments, when the laceration of the dura mater or the lesion of the brain sets up grave and persistent symptoms, and when efforts at replacement of the fragments by other means than trephining are found to be impracticable. 2. In fractures complicated with the impaction of foreign bodies or projections in the substance of the cranial bones or in the superficial layers of the brain, with persistent symptoms, and impossibility of removal of the foreign bodies by other means. 3. In various mechanical lesions of the head, complicated with serious cerebral mischief, and of a persistent nature, such as contusion and compression of the brain, or even prolonged hemiplegia, with effusion of blood or pus, where this is supposed to be of a circumscribed nature; provided, however, that the local lesion is well defined, and, above all, that active therapeutic means produce no effect; this last being an extremely important reservation.

The contraindications to trephining, on the other hand, are as follows: 1. It should not be performed when the foreign body, having penetrated the skull, is lost in the deep parts of the brain, or becomes inaccessible to instruments. 2. If the blood or pus effused within the cranium does not appear to form a focus in communication with the opening in the bone. 3. In every fracture, whatever may be its extent, which is not complicated by the impaction of fragments, nor by persistent symptoms of compression or paralysis. 4. In the state of cerebral disturbance, or of more or less profound coma, either with or without localized lesion. 5. When convulsions of an indeterminate, or epileptiform, character are present, since these are probably susceptible of cure. 6. In dif-

fuse inflammation of the brain, or of its meninges, rendering itself more or less evident by corresponding symptoms.—*Lancet*, March 26, from *Mémoires de la Chirurgie de Paris.*

44. *Elephantiasis of Scrotum and Leg, treated by Removal of the Tumour and Ligature of the Femoral Artery.*—Dr. J. FAYRER, of Calcutta, relates (*Med. Times and Gaz.*, May 28, 1870) a case of elephantiasis of the scrotum and left leg, in which he removed the former, and about three months afterwards tied the femoral artery in the left leg. Dr. F. had previously described (*Clinical Surgery in India*, p. 688) two cases of elephantiasis of the leg treated by ligature of the femoral artery. "The result in these cases was not encouraging. The first died of pyæmia on the nineteenth day. The limb had diminished considerably, and so far it promised to do well; his death prevented any opinion being arrived at as to the probability of permanent decrease in the hypertrophy, so that, beyond the fact of an immediate diminution in the swelling, as a result of the operation and the consequent bandaging, nothing definite could be arrived at from this case. My own impression is, that the reduction of the swelling is due more to the bandaging and rest in the recumbent posture than to the ligature of the artery, and I have good reason for believing so, as I have frequently observed in the elephantoid legs of those who have been operated on for scrotal elephantiasis that, with the necessary rest in bed after the operation, the leg diminished considerably, but that it increased again when the recumbent posture was no longer continued. Elephantiasis of the leg, like elephantiasis of the scrotum, is the local expression of a constitutional disorder, and I do not see why temporary deprivation of the blood-supply to the limb should have any permanently curative effect on the local disease. The anastomotic circulation provides for the nutrition of the limb, and, indeed, so far it is probable that the part especially diseased, the cutis, is even more vigorously supplied than under ordinary circumstances, for the result of the cutaneous hypertrophy must certainly be an enlargement of the cutaneous bloodvessels, and as these are concerned in carrying on the anastomotic circulation when the main trunk is obstructed, it appears hardly probable that this condition can be conducive to a curative action in the affected part, nor is it at all probable, I think, that a mere change in the mechanical arrangements for the distribution of blood to the limb can have any effect in removing what is only a local symptom of a constitutional disease.

"The result of the second case tends, I think, to show that this view is correct, for whilst there was a marked diminution at first, after the artery was tied the swelling gradually returned as the man recovered from the operation, and when I saw him some time afterwards he was just as bad as when I tied the artery.

"The third case (that I now record) is not more satisfactory. There was the same temporary diminution of size during the rest and confinement to bed after the operation; but when he recovered the swelling slowly returned, and he is now, six months after the operation, just as bad in respect of elephantiasis of the leg, as he was when the femoral artery was tied.

"I have before referred to the improvement that takes place in the constitutional health after the removal of a scrotal humour—the absence of the periodically recurring paroxysms of elephantoid fever and the consequent cachectic condition it induces. The removal of an ever present source of blood dyscrasia is attended with the best results, and patients have frequently told me that the great relief they had obtained was not so much due to the removal of the abnormal growth, as of the periodic fever which caused them such great distress.

"In this case the same improvement took place, and the elephantoid fever was removed with the tumour, but notwithstanding the amendment in the general health, the leg returned to its original size, and thus proved that, in this case, as in others, the ligature of the artery had not been followed by any permanent benefit to the limb."

45. *Supracondyloid Amputation of the Femur.*—At a recent meeting of the Royal Medical and Chirurgical Society, May 24, Mr. WM. STOKES, of Dublin, contributed an interesting paper on this subject. He referred to the fact that,

while amputation at the knee-joint had become a more generally approved operation than it once was, orthopædic mechanists—notably Mr. Heather Bigg—had pointed out difficulties in fitting an artificial limb to the stump. With the view of removing the difficulty, he had adopted the plan of removing the condyles of the femur as high as half or three-quarters of an inch above the edge of the cartilage; he also removed the cartilaginous surface of the patella, leaving the bone itself to form part of the covering of the stump. The advantages stated to be possessed by this mode of operating were, that the patella formed part of the face of the stump, covering in the divided surface of the femur; and that an artificial limb can be conveniently applied. Mr. Stokes also contrasted his operation with amputation through the knee-joint, or where the medullary canal is opened, and also with the operations of Gritti and Carden; over each of which he believed it to possess certain advantages.—*Brit. Med. Journ.*, May 28, 1870.

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46. *Excision of the Joints for Disease.*—Mr. F. J. Gant read before the Royal Medical and Chirurgical Society (April 12, 1870) a paper, the primary object of which was to describe the *conditions of disease* which, in the author's experience, seemed to be appropriate for excision of the joints in general; and those conditions also which specially pertained to the knee, hip, and elbow, severally, with relation to this operation, as illustrated by the accompanying cases. So far as the appropriate nature of these conditions of disease might be established by the typical character of the cases adduced, and confirmed by an increased number, they would represent principles whereby to determine the propriety of performing the operation of excision in diseases of the joints. With this view the author appended a careful analysis of each series of cases in regard to their pathology and the operation itself, and its results; and also of the general results of excision in the cases taken collectively, and the relation of these results to the pathology of the joints subjected to operation.

The necessity either for excision or for amputation in joint-disease implied incurability by non-operative treatment. As regarded excision, incurability was defined to signify that condition of the local disease wherein the joint had become *functionally useless* by destruction of the articular cartilages, without the supervention of anchylosis, but while the *constitution* still retained the reserve power requisite for the long process of reparative union—averaging three months after removal of the diseased bone. Any other cases—namely, of advanced local disease—if not falling within the provision of the latter clause of the definition as to the requisite constitutional reserve power, but accompanied with prolonged hectic and exhaustion, would be proportionately unfavourable or unfitted for excision, and must be submitted to amputation.

As compared with the *natural cure* by anchylosis, as a possible result in joint-disease, excision would seem to be preferable in proportion to the more prolonged period of recovery, when unaided by surgical removal of the diseased bone, a probation which entailed long-continued suffering, and left the constitutional vigour reduced and inadequated to sustain the contingencies of disease in after life.

Failures of the natural cure were then considered with regard to excision. This comprised two results: defective kind of anchylosis for the functional use of the limb, as fibrous anchylosis in knee-joint disease, and osseous anchylosis in elbow-joint disease; or malposition of the limb; accompanied, perhaps, with defective anchylosis.

The author then proceeded to state *in extenso* the pathological conditions, or those of disease, and their results from failures of reparation, which severally justified the operation of joint excision, and those also which especially pertained to the knee, hip, and elbow. The histories of the illustrative cases were narrated, and their analyses appended.

The following *general* results were enumerated:—

1. *Excision* proved successful, by one operation, in 16 out of 20 cases of the joints referred to.

2. Of the 4 unsuccessful cases, by one operation, 3 were cases of *scrofulous*

disease, and of the knee-joint, out of a total of 9 cases; the remaining one being *chronic synovitis*, and of the elbow-joint, out of 5 cases.

3. *Re-excision* was resorted to in 2 of the 4 cases; 1 knee-joint, and 1 elbow-joint; the latter with a successful result.

4. *Secondary amputation* was performed in 3 of the 4 cases. All 3 were knee-joint cases, and of scrofulous disease; 1 of which had been subjected to re-excision. The 3 amputations made rapid recoveries. These results tended to show that, if the attempt to preserve a limb by excision, and even by re-excision, of a large joint, as the knee, should fail, the operation was not unfavourable to secondary amputation for the preservation of life.

5. *No death* ensued in any of the 20 cases of the knee, hip, or elbow-joints, whatever had been the condition of disease, or the operation—excision, re-excision, or secondary amputation.

The paper was accompanied by drawings and specimens of bone.—*British Med. Journal*, May 14, 1870.

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47. *Analysis of* 184 *Cases of Stone in the Bladder of the Adult treated by Lithotrity.*—Sir HENRY THOMPSON communicated to the Royal Medical and Chirurgical Society (May 10, 1870) a series of 184 consecutive cases of lithotrity in the adult, operated upon within a recent period; all treated by the same method and with the same instruments. He furnished all the most important details relating to each case, and presented the stone itself in almost every instance, preserved for inspection. His object was to make an impartial estimate of the crushing operation, to ascertain its real value, and its place amongst surgical operations. Although this had never yet been fully done, he regarded Sir B. Brodie's last communication to the Medical and Chirurgical Society as perhaps the most trustworthy and valuable record, so far as it goes, which exists on the subject. In order to accomplish this object, he had made carefully written records of every case; and he cited the following circumstances as necessary to be taken into consideration: that the 184 cases had been treated by a uniform method, within a comparatively brief period of time; that all were adults, and embraced much variety of constitution; that all the important facts relative to each were noted in a history of each one, which was attached to the paper as an appendix; and that a large proportion of the calculi were of considerable size. And the author believed he was correct in saying that so complete an opportunity for studying the results of lithotrity had not been offered hitherto, since, as far as he was aware, the data necessary for the formation of a judgment had not been presented to the profession, either in this country or elsewhere.

The results of the operation were discussed under the following heads: 1. The rate per cent. of recovery after the operation, and the causes of death when it occurred. 2. The general condition of the patient after the operation. 3. The frequency of recurrence of stone after lithotrity.

The chief facts relative to the 184 cases were as fellows. They were consecutive in point of time, no case being omitted; that all were adults, and mostly of advanced age; that they included many individuals of feeble health and constitution; that they were chiefly British, although several were from other nations. The mean age of the 184 cases was no less than sixty-one years. The youngest was twenty-two years old. Only three were below thirty years. The oldest was eighty-four years. There were forty-six cases of seventy years and upward. With very few exceptions, all stones of an ounce and upward were reserved for lithotomy. All obviously below that were crushed. Not one case was refused operation, not one was left unfinished, and in no instance was an operation of lithotrity completed by lithotomy. The recoveries, reckoning every kind of casualty following the operation, were 93 per cent.; but omitting five cases of death, not by any means due to it, the mortality amounted to only 4 per cent. A second operation for recurrence of the stone was performed for thirteen of the 184 cases; 122 were uric acid and the urates; 16 were mixed; 40 were phosphatic; 4 oxalate of lime; 1 cystic oxide; and one pure phosphate of lime.

The important logical conclusion to be derived from the mass of facts considered was, that lithotrity is an eminently successful operation. For a certain number of cases, its success may be regarded as a certainty—absolutely without fear of any contingency, except such as attends the minor operations of surgery; for example, the opening of a small abscess, or the passing of a catheter. For the author stated that he had never lost a patient in the whole course of his experience after crushing a stone which was no larger than a small nut; and this he considered was a size at which, with few exceptions, every stone ought to be discovered. But this very fact led the author to remark that the success of lithotrity cannot therefore be considered apart from a knowledge of the extent, in regard to the magnitude of the stone and the constitution of the patient, to which the capabilities of the operation have been pushed. When it is employed for stones as large as a date, or a small chestnut—and it is impossible to deny the excellent chance of success which this method offers to the subjects of such stones—a certain, but still only small, proportion of deaths must be expected. And the rate of mortality will correspond with augmentation in the size of the stone, and with the amount of existing disease and age on the part of the patient. Given a small stone in a fairly healthy person, and success is certain; the possibility of contingency in such a case depending only on the presence of those remote and excessively rare conditions which will make for an individual here and there the mere passing of a catheter a cause of death. The rule observed had been, for the most part, to apply lithotrity to all calculi obviously less than an ounce in weight, easily discovered by sounding, and to operate on all larger ones by lithotomy.—*British Med. Journ.*, June 4, 1870.

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48. *Lithotomy.*—Mr. Holmes Coote says (*Lancet*, May 21, 1870) that "lithotomy, properly performed, is not in itself so serious an operation as some authors have made it. The last 22 cases performed at St. Bartholomew's Hospital have been without exception successful. In unfortunately fatal cases the cause of death is not hemorrhage, or very rarely so. I cannot recall a case of death from hemorrhage at St. Bartholomew's Hospital during the whole period that I have been attached to that institution. Neither is extravasation of urine a common cause of death with good operators. But when the kidneys have become diseased, the patient's power of recovery seems wonderfully diminished; and inflammation of the peritoneum is an event which the surgeon justly holds in dread."

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49. *Necrosis of the Humerus; Resection; Recovery.*—Dr. Demarquay relates (*Wien. Med. Zeit.*, 1869) the case of a huntsman who, six years previously, had received a gunshot wound in his arm. From the wound, which healed readily, no immediate bad effects were experienced. After the lapse of four years the patient first began to experience severe pains at the seat of the wound; an abscess soon formed there, which, on breaking, gave origin to a fistula, from which were discharged pus and fragments of bone. A probe passed into the fistula came in contact with necrosed bone. A resection of the diseased portion of the bone was performed, and the patient recovered without the occurrence of any unpleasant symptoms. Upon an examination of the excised portion of bone, no sequestrum was found, but in the course of the enlarged medullary cavity of the bone, which was lined with a grayish, lardaceous pus-like matter, in which the microscope detected light granules of fatty matter, there were found masses of a hydatidiform appearance. D. F. C.

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50. *Preventive Treatment of Syphilis.*—At a clinical lecture delivered by Prof. Thiry, of Brussels, he warned his pupils against resorting to precipitate treatment of venereal sores under the idea of preventing syphilis. Until the chancre becomes indurated it is not, in fact, syphilitic at all, and, so far from being benefited by mercury, it not infrequently becomes phagedænic. The mercury is not indicated until induration appears. Then it acts as a curative, not a preventive, agent. The treatment of the chancre itself prior to this, whatever its form, extent, seat, or duration, should be local, yet energetic;

and the bringing this chancre into a state of simple ulcer is the best guarantee we can offer against constitutional syphilis. When, however, in spite of such local treatment, specific induration does appear, syphilis is unmistakably present, and we must interfere for the prevention of further contamination of the system. Now mercury must be at once and vigorously employed, and we are then often able to cut short the disease at its very commencement; and the mercury promptly used has to be continued for a much less time than when delayed. The disappearance of the specific induration is also at this early period the criterion of the efficacy of the cure.—*Med. Times and Gaz.*, May 21, 1870, from *Presse Belge*, April 24.

OPHTHALMOLOGY.

51. *Changes in Astigmatism under the influence of Accommodation.*—Dr. DOBROWSKY shows (*Archiv f. Ophth.* xiv. 3), partly by fully detailed cases of astigmatism, and partly by experiments on eyes rendered artificially astigmatic by cylindrical glasses, the influence of the ciliary muscle upon the defect. He arrives at the following results:—

1. Astigmatism may be completely corrected by unequal spasmodic contraction of the muscle of accommodation. Hence, it happens that astigmatics do not so much complain of seeing badly, as that they can see clearly for only a short time. They do not see the object in dispersion circles, as would be the case according to the theory of astigmatism, but tire easily, exactly like hypermetropics, who also can for a time overcome their optical defect in near vision by an effort of accommodation. In such persons the astigmatism cannot be detected prior to the instillation of atropia, and the regular myopic astigmatism is, for near vision, a less favourable anomaly than simple shortsightedness, but is, on the contrary, less injurious to distant vision, being capable of correction by accommodation. Inversely, in hypermetropic astigmatism near vision is better, and distant vision worse, than in a simple hypermetropic eye.

2. In consequence of unequal contraction of the ciliary muscle, and irregular curvature of the lens, the astigmatism may be partially but not entirely corrected. This happens chiefly in persons enfeebled by long illness, or tired by prolonged exertion of the eyes.

3. By effort and spasm of accommodation it is possible that astigmatism may be increased. Here, also, it is evident that the actual grade cannot be correctly estimated until the ciliary muscle has been paralyzed by atropia. Such patients, when the spasm is relieved, require to change their glasses.

4. By contraction of the ciliary muscle the hypermetropic eye may be so modified as to become apparently shortsighted in one or both meridians. By depletion and the continued use of atropia the spasm may be relieved, and the improper employment of concave glasses may be dispensed with.

5. By irregular spasm of the accommodation eyes that are symmetrical, and either emmetropic, hypermetropic, or myopic, may be made to appear astigmatic.

6. In all cases of astigmatism it is necessary to paralyze the accommodation before deciding whether the defect, or its degree and kind, depend upon the formation of the eyeball, or, partly or wholly, upon some abnormal state of accommodation. It is also possible that other anomalies of refraction may be only apparent, and may be shown by atropia to be astigmatism.—*Royal London Ophthalmic Hosp. Rep.*, November, 1869.

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52. *Histology of Trachoma.*—Dr. WOLFRING, of Warsaw, gives (*Archiv f. Ophth.* xiv. 3) an account of the structure of the normal conjunctiva, on which his views differ in many points from those of other authors.

The so-called papillæ are not formations analogous to the actual papillæ, such as are seen in the mucous membrane of the mouth, but are produced by the tarsal conjunctiva, being marked in all directions by grooved channels, or

being irregularly folded. In the furrows thus formed there are numerous depressions, which may be regarded as tubular prolongations of the mucous membrane. At the margins of the lids, where the thin conjunctiva is very closely adherent to the tarsus, these furrows are very numerous and very shallow; upon the tarsus they are less numerous, but deeper; and at the point of reflection they pass gradually into those deeper furrows which are characteristic of the appearance of the conjunctiva of the sac. The elevations inclosed between the furrows form, therefore, the papillæ; and these, which are scarcely perceptible at the free margins of the lids, are more evident towards the angles of the eyes and towards the reflection of the conjunctiva. In new-born infants and children the grooves and elevations are very little developed, and their common presence in adults is probably due to the circumstance that the conjunctiva, where it possesses a looser tissue, and is less firmly united with the tarsus, is more at liberty to swell. From the texture of the tarsal cartilages brush-like prolongations of tissue pass into the above described elevations. The vascular capillary network, as well at the bottoms of the furrows as at the tops of the elevations, is "apparently" equally distributed and arranged; yet the author only half concedes the appellation "papillæ" when he declares that every elevation must have its proper arterial branch, but in such a way that its capillary net communicates uninterruptedly with that of the furrows.

The epithelium of the conjunctiva is described by the author as cylindrical epithelium, which, in its most superficial layers, has received a flattened form from pressure. The deep layers possess none but round cells. The cylinder form is least recognizable in the furrows and in the folds of reflection. The cylindrical cells are so quickly shed that they can only be studied in perfectly fresh preparations; and hence this layer has been overlooked by many observers.

The bloodvessels proceed from the external and internal palpebral arteries, which, increased by branches from the temporal and zygomatic regions and the cheeks, form the superior and inferior palpebral arches. The arch of the lower lid courses near its lower margin, that of the upper lid one or two millimetres from its free margin. The latter, however, gives off a branch at each angle of the lid, which meet to form another arch immediately along the convex margin of the tarsus. These vascular arches, and their principal branches, lie near the cutaneous surface of the lids; and from the principal branches proceed, besides those to the skin and the muscles, twigs to the glands of the tarsus, and others that perforate the cartilage to reach the conjunctiva, and particularly its papillary elevations. The twigs are thicker the nearer they are to the convex margin of the tarsus. The capillaries of the conjunctiva, together with those of the posterior surfaces of the tarsal glands, unite to form a close network of fine veins, which lies between the cartilage and the conjunctiva. This network discharges its blood into branches lying parallel with the Meibomian glands, and proceeding to the convex margin of the cartilage, where they unite to form two arches, which correspond to the second arterial arch of the upper lid, and to the single arterial arch of the lower lid.

The pathological changes of the conjunctiva are not specifically different forms of disease, but depend upon essentially similar processes, that proceed step by step from overfilling of the vessels to œdematous swelling, to infiltration of the tissues with elements of lymph, to increased secretion from the mucous surface and its glands. The author uses here almost the same words as Stellwag, without, however, quoting him; and employs also his names for the different forms of trachoma. He has proved experimentally upon animals that in simple catarrhal inflammation the white corpuscles of the blood escape into the conjunctival tissue, and are ultimately discharged with the swollen epithelium in the form of pus cells. If the inflammation be more severe, and of longer continuance, the vessels become hypertrophied, and the conjunctival tissue is converted into an adenoid structure by deposit of lymphatic bodies. In papillary trachoma the papillæ become actual swellings, the lymphoid cells in which make them appear like the solitary follicles of the intestinal canal. In mixed trachoma these roundish collections of lymphoid bodies are still more increased, and inclosed between the coalesced papillæ. The largest trachomatous granules

are found near the deeper margins of the cartilages, but they are in no way distinguishable, except by the accumulation of their elements and their greater elevation, from those that are scarcely visible to the naked eye. Generally the granules appear first to come into existence when the most acute stage of inflammatory hyperæmia has passed away. It is well known, also, that when the swelling and redness have entirely disappeared, the infiltrated spots become visible as yellowish granules, which may continue unchanged for years, even when the rest of the conjunctiva has become completely normal.

Different from this is the bladder-like trachoma granules, which, when punctured, give exit to a little fluid containing lymph corpuscles, and collapse. These become developed as it appears, primarily, or as a consequence of hyperæmia of a single vascular twig, which may very well pass unobserved by the patient. In these cases there is probably some especial predisposition. Such granulations may either quickly disappear, or they may themselves become sources of irritation, or they may give rise to swelling of the papillæ, and to the other forms of trachoma. They are distinguished from the harder forms of trachoma granules not only by their position immediately beneath the epithelium, but by containing serous or gelatinous fluid, in which lymphoid elements are mingled only in small proportion.

The fully formed trachoma granules or follicles are usually, but not always, separated from the surrounding textures by some concentric layers of connective tissue. They are surrounded by larger vessels, especially on their tarsal aspect, but their interior is only sparsely penetrated by capillaries.

Whether these granules, when fully formed, become connected with the lymphatic vessels, the author has not been able to determine, since he has not succeeded in injecting the lymphatic vessels of the human eye. In dogs, however, in which trachoma is regularly present on the inner surface of the nictitating membrane, each granule is clearly surrounded by lymphatic vessels, and since the similar formations in the intestinal canal are certainly in relation with the lymphatic system, it may reasonably be believed that in trachoma of the human eye, a similar communication must exist.—*Royal London Hospital Reports*, November, 1869.

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53. *Rupture of Eyeball, with loss of Lens and Iris; good Sight remaining.* Mr. JOHN A. NUNNELEY, Ophthalmic Surgeon to the Leeds General Infirmary, records (*British Medical Journal*, April 23, 1870) the following case, which is very remarkable from the sight being preserved after so severe an injury:—

M. G., aged 54, a robust, healthy woman, came before me in August, 1869, having received an injury to her left eye. She stated that a fortnight previously she had been knocked down in the street by a blow on the eye from the fist of a drunken man. The parts about the orbit were severely bruised; the swelling which came on soon after the injury kept the lids closed for a few days, a little blood discharge escaping from between them, but nothing else that she was aware of; and having little pain or discomfort, she had not thought it necessary to apply sooner for advice, although the sight of the eye had been gone from the time of the injury. The eye was perfectly natural and the sight good before the accident.

When I saw her, the swelling and ecchymosis of the soft parts had disappeared, the cornea was bright and clear, and the anterior chamber was filled with blood, so that the state of the parts behind could not be seen. Parallel with the upper margin of the cornea, and about midway between it and the insertion of the superior rectus tendon, was a somewhat irregular wound in the sclerotic and conjunctiva, about three lines in length, and nearly healed; the eyeball was rather softer than natural; tension = — T 1. She could follow a candle, and tell the position of the window in the room. As the blood in the anterior chamber became absorbed, it was found that the iris was gone; it had been torn from its ciliary attachment and lost. The absence of the lens, which must have been driven out of the eye in its capsule, was proved by the catoptric test. The vitreous humour was at first hazy, obscuring the details of the retina; but there had been no effusion of blood into the vitreous chamber, nor any apparent injury whatever to the retina and deeper parts of the eye. The

cloudiness of the vitreous body has now quite cleared up, the retina is healthy, the ocular tension is natural, and the field of vision good; the patient is able to count fingers and distinguish the outline of large objects; and with a two-inch convex lens and a stenopæic apparatus, she can read No. 4 (Jäger), and thinks that the eye is almost as useful as ever.

MIDWIFERY AND DISEASES OF WOMEN AND NEW-BORN CHILDREN.

54. *Mechanism of Production of Face Presentation.*—Dr. J. Matthews Duncan states (*Edin. Med. Journal*, May, 1870), that "it has always appeared to him beyond a reasonable doubt, that the immense majority of face cases are the result of derangement of the usual mechanism of the first part of the progress of the fœtal head through the pelvis; or, that presentation of the face is the result of a displacement of the vertex backwards as regards the child, the extension of the head being produced at or near the brim of the pelvis by the propelling powers of labour."

Dr. D., considers it highly probable that the chief cause of face cases is obliquity of the uterus in any direction, insuring a curvature of the genital canal at the brim of the pelvis; that this cause operates when the forehead of the child is placed near the concavity of the curved canal, or nearest the line of the propelling force; and that the dolichocephalous form will greatly favour the transformation under these circumstances of a vertex into a face case.

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55. *Remarkable Case of Complex Labour.*—Thomas Moore Madden, Assistant Physician to the Dublin Lying-in Hospital, communicated the following he considers unparalleled case to the Dublin Obstetrical Society:—

"February 9th, 1870. I was sent for, at 7.30 P.M., to visit J. S., of 7, Moore-street, a patient attended by the pupils from the extern maternity of this hospital. She had been in labour, and the liquor amnii had been evacuated for twenty-four hours. The pupil in charge of the case (Mr. E. B. Roche), to whose notes I am largely indebted, was not sent for till an hour previously, *i.e.*, 6.30 P. M., when on examining her he found about three inches of the cord prolapsed, and two feet, with a rounded tumour behind, then presenting. He, not unnaturally, concluded this was a breech; and as the cord was pulsating strongly endeavoured to return the prolapsed funis. In doing this he discovered, to his great surprise, that the rounded tumour he felt was not the breech but the head tightly jammed down through the brim by the closely contracted uterus. He then made a decided attempt to push the feet and cord above the head, but so tightly were they caught between the head and the pelvis that he could make no impression on them. He now sent for assistance; and endeavoured in the mean time to keep the pressure off the funis. On my arrival I found Mr. Roche's account of the presentation perfectly accurate. 'The feet were presenting at the posterior part of the vagina, the heels to the sacrum, the toes pointing directly forwards. The feet could be circumscribed and followed up to the lower part of the legs, where they were tightly caught between the head and the promontory of the sacrum. There was a loop of the funis, about three inches, prolapsed between the legs, and pulsating strongly in the intervals of the pains. The head lay in the second position, or rather more transverse, and was jammed down upon the feet and cord'; the pulsations in the latter now ceasing during each pain. The uterus being very tightly contracted on the fœtus, and the liquor amnii having been evacuated for 24 hours, and knowing from experience on other occasions the great difficulty of performing version under these circumstances, I proceeded to apply the long forceps in the hope of bringing down the head past the feet; they however failed to make any impression, although I tried them in the occipito-frontal as

well as in the transverse diameters, and as they slipped in both, after several attempts, I abandoned them.

"The funis was still pulsating, but less strongly than when I first arrived. She was now put under the influence of chloroform, by Mr. A. C. Roberts, and this had the effect of so far relaxing the parts that I was enabled, though with considerable difficulty, to draw down one foot; this I could not do before the chloroform was given. The foot was then secured by the attending pupil whilst I reintroduced my hand, and, using some force, succeeded in pushing back the head through the brim of the pelvis and into the uterus, at the same time making forcible traction on the foot. After these efforts had been continued for some time without apparent effect, the fœtus suddenly rotated, the foot came down, the head receded, and the delivery was now easily accomplished. The child was born alive, though apparently still-born, and was resuscitated by the diligent application of the ordinary measures. There was a deep indentation on the right parietal bone where the head had been compressed between the feet and the pelvis. She made a good recovery, and some days after I learned that the mother and child were doing well.

"There appear to me to be two points of interest in the foregoing case; the first is the extreme rarity of a compound presentation such as this; the second is the length of time which had elapsed between the rupture of the membranes and the birth of a living child in this case of prolapsed funis.

"The extreme rarity of a case such as that just described may be inferred from the fact that in none of the statistical reports of the Rotunda Dublin Lying-in Hospital, which, conjointly, afford the largest, and perhaps the most accurate, mass of obstetric statistics in existence, is there any mention of a similar case of complex labour.

"Mauriceau," says Dr. M., "is the only writer he knows of who records a case nearly analogous."—*Dublin Quart. Journ. Med. Sciences*, May, 1870.

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56. *State of the Pulse immediately before and immediately after Parturition.*—The pulse during the puerperal state was made the subject of a series of observations by Dr. HÉMEY in 1864, while serving as interne under Dr. Empis, and he believes his observations established two remarkable phenomena: First, the lowering of the pulse (already noted and studied by M. Blot), with regard to which Dr. Hémey says his observations confirm those of Blot. Second, the inequality and irregularity of the pulse, which had not hitherto attracted attention.

Dr. Hémey's observations seem to have been made with very great care, and are recorded with great minuteness of detail, and therefore seem worthy of having an abstract of them recorded here; but the results arrived at are different from those of Dr. M'Clintock, published in this Journal in May, 1861; and also from those arrived at from a series of observations made by the writer of this report in the Coombe Lying-in Hospital.

Dr. Hémey takes 75 as the average pulse of a healthy woman. Before labour it is from 75 to 84; but he does not count any pulse as lowered, unless it is 60 or under, and by adopting this as his standard, he believes he excludes all doubtful cases from his tables. He thinks at least one-sixth of all newly confined women have their pulse lowered. In one case the pulse was as low as 44; in many he found it 48; and in a great number 52. The lowering shows itself most frequently some hours after labour, and continues sometimes without variation; in some it increases during the eight days. At the end of the third, fourth, or fifth day the pulse sometimes becomes relatively more frequent and falls again, or it may preserve this frequency to the end; but these changes seem to depend on accidental circumstances, and independently of such the lowering appears to have its maximum at the end of the second day from labour, and to diminish gradually and cease about the tenth day.

Out of 100 consecutive cases in which the daily state of the pulse was recorded in the Coombe Lying-in Hospital, it was found as low as 60 in five cases and within the first 24 hours after delivery; and in each it had risen to from 70 to 84 on the second day, and maintained this average as long as the patient was in the hospital. In one case the pulse was as low as 56 eight

hours after labour. This woman had been delivered in the street, on her way to the hospital. On the second day the pulse was 72, at which it remained till the fourth day, when it fell to 65. On the fifth day it was 72; and on the seventh, which is the last observation recorded, it was 84. This was the only case of the series in which the pulse was under 60.

The duration of labour, unless it be prolonged so as to do local or general injury, does not seem to influence the changes the pulse undergoes, but the occurrence of gastric derangement with headache, of a foul tongue with constipation and hot skin, on the second day may raise a pulse to 80 or 88, which the evening before was only 56, and Dr. Hémey observes, as has already been remarked by M. Blot, this increase of 30 is of more importance than would attach to the total number of 80, and the increase is soon proved to belong to a pathological condition by the action of a purgative which reduces the pulse again to 54 or 60. When there is metritis or sloughing of the vagina, or puerperal fever, the characteristic changes of the pulse are more permanent.

Dr. Hémey combined with his researches on the pulse some observations as to presence of sugar in the urine of women lately confined. M. Blot announced its existence, in a paper read at the Academy in 1856, and M. Lecomte denied it in a communication read in the following June; but in 1859, Professor Bruecke confirmed the statements of M. Blot. Dr. Hémey found that of one hundred newly confined women, twenty-seven had a quantity of sugar, varying from eight to eighteen grammes per litre in their urine; the urine of thirty-five presented traces of it only; and in thirty-eight no appreciable trace of it could be discovered. Its presence was of short duration; even when most abundant, it could be found for a day or two only, and it did not seem to be in any way connected with the secretion of milk, and it did not seem to influence the condition of the pulse, for though in fifteen or twenty-seven cases where it abounded, the pulse was quick; in twelve other cases it was remarkably slow.

With regard to the influence of the secretion of milk, Dr. Hémey found that from the second to the fifth day, the pulse did not undergo any notable change in two hundred and eighty women out of four hundred; he believes, however, that in many cases where the pulse did not seem to undergo any change from the second to the fourth day, it was because the lowering of it was interfered with by the state of the breasts, and he finds the best nurses, and those who have the most abundant supply of milk, are those in whom the pulse is lowest and that without interruption from the second to the tenth day.

The period of pregnancy at which labour occurs does not seem to influence the changes undergone by the pulse in any way. In one case when it occurred at the end of the fifth month in consequence of a fall, the pulse, which before labour was 80, fell to 76, 68, and 52, on the following days, and then rose again to 72; but in other cases of premature labour no lowering of the pulse was observed. Where the fœtus is dead for some time before labour sets in, the lowering of the pulse seems to begin at the time of the child's death, rather than when it is expelled, and Dr. Hémey gives a series of cases illustrative of this as the fact is made use of in progress of the essay.

After-pains may not only, as M. Blot has already remarked, coincide with a slow pulse; but, according to Dr. Hémey's observations, when they occur independently of any other pathological condition, they are rarely accompanied by a quick pulse. Moral emotions, however, have a great influence in raising the pulse; diet does not affect it unless the process of digestion be deranged, and then the pulse is more easily affected in the puerperal state than it would be at other times. Change of position will also affect it more notably at this time, so that a woman lying down may have her pulse only 68, and it may rise to 104 when she sits up. Primiparæ seem less disposed to have the pulse lowered than multiparæ, perhaps because the former are more subject to the multitude of little causes which tend to accelerate it.

As a prognostic sign, Dr. Hémey looks on this lowering of the pulse as most favourable. It occurs most frequently when the health of puerperal women is best, and it is oftenest met with among the vigorous and those who have the most abundant supply of milk; and he has never known a woman who presented it to be affected with puerperal symptoms of any gravity.

As to the cause of this lowering of the pulse, Dr. Hémey argues that it depends on an increased arterial tension caused by the rapid withdrawal from the general circulation of a certain number of arterial trunks; that is to say an increased arterial tension caused by the large quantity of blood hitherto required by the uterus being thrown into the general circulation. It may be regarded as proved, he says, and it has been demonstrated by the sphygmograph, that the frequency of the pulse is in the inverse ratio to the arterial tension; and it can also be demonstrated by the same instrument, that the arterial tension is increased by compressing one or more arterial trunks, so as to withdraw them from the general circulation. Marey and Blot, he says, assign the same cause; but he finds new proofs of its being the cause in the facts related in reference to premature confinements; to the cases where the child died before birth; and in the effect of the seasons. In premature confinement the same cause for the increased arterial tension exists as when birth takes place at the full term, and when the child dies before birth it is then the supply of blood to the uterus is diminished, and consequently it is then the pulse is lowered, and not after the child is expelled; and it is well known that cold increases the arterial tension, and the lowering of the pulse is most marked in the cold seasons.

The analysis of four hundred observations gives ninety-four cases in which the rhythm of the pulse was altered; most frequently it was irregular and uneven at the same time; exceptionally it was irregular or unequal only. Dr. Hémey has met with these phenomena but twice before labour, and in both cases the patient had old organic disease of the heart. In all the other cases the irregularity showed itself from the first to the tenth day after labour, with the exception of three in which it did not appear until the fifteenth or eighteenth day; but it is to be noted that very few of the observations extended beyond the twelfth day, so that the extreme limit of the occurrence has not been fixed. In some cases the irregularity disappears quickly, but may return soon, and it is rare to find it persist more than six days without interruption. The irregularity and inequality may accompany one another, or exist separately, and these modifications always supervene very rapidly on one another. Of the ninety-four cases, the irregularity without inequality was only observed in twelve, and the inequality without irregularity in eight; very often the irregularity and inequality exist with the slowness of the pulse, but the slowness may be found without the others, and they may occur with slight acceleration of the pulse.

The prolongation of labour does not of itself seem to influence these phenomena, but when it causes any injurious consequences the irregularity disappears. It is in fact rare to find a pulse febrile and irregular. There does not seem to be any relation between these phenomena and the secretion of milk, except that milk fever, like all other febrile conditions, will cause them to disappear; neither does the term of pregnancy, nor the state of the life or death of the child seem to produce any effect; nor do moral emotions, except so far as by quickening the pulse they cause irregularities to disappear. Pursuing the investigation under the same heads as in reference to the slowness of the pulse, Dr. Hémey does not find that the diet or age of the patient, primiparity or multiparity, nor yet the season of the year exercises any influence; nor does he think the presence of these phenomena indicates anything unfavourable as to the recovery of the patient; and he is unable to suggest any cause for them beyond some obscure condition of the nervous system.—*Dublin Quart. Journ. Med. Science*, May, 1870, from *Archives Gén. de Méd.*

57. *Chloral in Puerperal Convulsions.*—Baron Paul von Sergdewitz, of Bale, communicated to the Obstetrical Society of London a case of violent convulsions in a woman suffering from endocarditis subsequent to delivery, in which chloral at once arrested the fits, after various other remedies had been used in vain.—*Brit. Med. Journ.*

Dr. Milne has also used chloral with success in a case of puerperal convulsions. "The case," he says, "was a purely psychical one, due to the shock of a sudden, loud, and unexpected sound, and therefore well fitted to test the

powers of the medicine, these cases being deemed rather obstinate. On the other hand, there was no albuminuria, and the absence of this complication lessened in some degree the seriousness of the case, and increased its amenableness to remedies. The benefit I obtained from the chloral was considerable, although not sufficient, in my estimation, to send one into ecstasies, or impress one with the belief that a novel cure had been brought before us of unexampled power."—*Edinburgh Med. Journ.*, May, 1870.

Dr. X., of Bapaume, communicated to the Imperial Surgical Society (March 23, 1870), through M. Demarquay, a very interesting case of puerperal eclampsia in a primipara. The convulsions came on during labour and continued after delivery. All the ordinary remedies having failed to afford relief, chloral was had recourse to, in increasing doses commencing with four grammes. When the dose reached six grammes, the patient fell into a deep and quiet sleep, which continued for twelve hours. After awakening she had slight attacks which were relieved by chloral, and complete recovery ensued.—*L'Union Med.* April 23, 1870.

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58. *Fundal Endometritis.*—Dr. Routh read a paper on this affection before the Obstetrical Society of London, April 6, 1870. After referring to three papers formerly read to the Society by Drs. Tilt, Meadows, and the President, on Gooch's irritable uterus, and showing how the three authors differed in their views, he stated that the disease in most of these cases was inflammation of the lining membrane of the fundus, and not flexions, or merely uterine congestions or inflammations. Dr. Routh then proceeded to explain Dr. Snow Beck's description of the arrangement of the nerves of the uterus, showing that the fundus was supplied by a distinct set of nerves in direct relation with the semilunar ganglia, and showed how their arrangements explained the radiations of pain. He then pointed out the gravity of fundal endometritis as compared to affections of the cervix, and specified the symptoms. After a short reference to the microscopical character of the discharge, he stated that there were four varieties of the disease which he had observed. 1. The convulsive form, in which the fundal pain, passing down one of the thighs, increased by passing the sound, etc., was accompanied by a variety of convulsive seizures, such as spasmodic vomitings, tetanus, hysterical fits with or without mania, up to epileptoid fits and catalepsy; these symptoms persisting for some time until the catamenial function was fully established, or until flooding occurred. 2. Inflammation of the fundal membrane with increased secretion, accumulation of this in the cavity from obstruction at the inner os, giving rise to symptoms of pregnancy, or even labour, with intense fundal pain, all relieved by a sudden gush of discharge, persisting for months and often recurring. 3. Chronic cases of Gooch's irritable uterus, with more or less complete loss of the power of walking. Here, also, the inflammation of the fundus was unmistakable. 4. Cases of acute fundal endometritis, which sometimes rapidly passed into metroperitonitis, generally fatal, although sometimes assuming a more chronic type. Cases of all these varieties were given, and the treatment of each was passed in review, being mainly local depletion by leeches, blisters, and occasionally dilatation by sponge-tents, the use of the hysterotome, anodynes, and measures locally antiphlogistic and calculated to produce a copious catamenial flow.

Dr. Tilt agreed with Dr. Routh as to the frequency and importance of endometritis, and said that it was generally confounded with inflammation of the cervix. He thought that for all practical purposes it was sufficient to divide the disease into acute, subacute, and chronic. He had found acute endometritis to be very rare, and his worst cases had occurred in young unmarried women. He considered a sudden gush of fluid, after sharp uterine pain, to be the best sign of subacute or chronic endometritis; and that, when the gentlest pressure of the finger over the enlarged fundus gave exquisite pain, the wall of the womb should be considered diseased as well as the lining membrane. Dr. Tilt was convinced that many cases of subacute or chronic endometritis were best treated by the leeches, injections, etc., adopted to cure the coinciding inflammation of the cervix. The next indication was to secure free exit of the discharge, which would permit the safe injection into the uterus of a solution of nitrate of silver

or tincture of iodine in cases that would not otherwise recover.—*Brit. Med. Journ.*, May 14, 1870.

59. *Acute Leucocythæmia in Pregnant Women.*—Dr. PATERSON read before the Medico-Chirurgical Society of Edinburgh, an interesting paper on this disease. The first case he had seen was a strong young woman, aged 20, who had been stout and ruddy, but towards the end of her pregnancy became suddenly sallow. After a normal labour, great enlargement of the glands of the neck came on; and on the eighteenth day he found that her blood contained only one-fourth of red corpuscles to three-fourths of white. The spleen was very large, and she died asphyxiated. The second case was also a young primipara; and he saw her at the request of a midwife, on account of hemorrhage. She was also sallow, with a large spleen and liver, and with blood resembling that of the preceding case. Eventually, the glands of her throat and neck also swelled, and she died on the fourteenth day. The third case had been watched from the outset; the blood was examined early in the disease; and, with great care, generous diet, the use of iron and other tonics, and the free administration of ergot during labour, she recovered, and is still alive. In all the three cases, the blood of the fœtus was healthy, containing no abnormal proportion of white corpuscles—illustrating the fact that no direct communication exists between the maternal and fœtal circulations. Dr. MATTHEWS DUNCAN remarked on the interesting nature of the cases, but regretted that *post-mortem* examinations had not been obtained; as, without them, the absence of some more tangible cause of death was not proved.—*British Med. Journ.*, June 4, 1870.

60. *The Colpeurynter to remedy False Positions of Uterus.*—In *Oesterr. Zietschr. f. Pract. Heilk.*, 1869, Dr. KUCHENMEISTER recommends the colpeurynter, after considerable experience in its use, as an admirable instrument for the rectification as well in cases of simple version and flexion of the uterus, as for exerting an adequate amount of pressure for the removal of adhesions and old exudations. The bag of the instrument is of different sizes. The largest will be the best adapted for the accomplishment of this latter object. Filled with water it should be inserted daily and retained for some hours—when tolerated by the patient, during the entire day, both when she is moving about and when she is sitting or lying.—*Centralblatt. f. d. Medicin. Wissenschaften.*, March 12, 1870. D. F. C.

61. *The Stethoscope as a Means of Ascertaining the Sex of the Child.*—Dr. JAMES CUMMING communicated to the Obstetrical Society of Edinburgh some interesting investigations on this subject.

TABLE I., MALES.

The first case was one of twins, the heart of the one fœtus was heard in the right groin beating 110 in the minute, and on delivery it proved to be a male; the second heart was heard in the left hypochondrium beating 154, and on delivery it was found to be a female.

2.	Fœtal	pulsation,	138	per minute.	15.	Fœtal	pulsation,	116	per minute.
3.	"	"	138	"	16.	"	"	120	"
4.	"	"	135	"	17.	"	"	120	"
5.	"	"	130	"	18.	"	"	138	"
6.	"	"	130	"	19.	"	"	125	"
7.	"	"	132	"	20.	"	"	140	"
8.	"	"	132	"	21.	"	"	140	"
9.	"	"	140	"	22.	"	"	137	"
10.	"	"	132	"	23.	"	"	140	"
11.	"	"	140	"	24.	"	"	141	"
12.	"	"	136	"	25.	"	"	122	"
13.	"	"	133	"	26.	"	"	120	"
14.	"	"	134	"					

TABLE II., FEMALES.

1.	Fœtal pulsation,		150 per minute.	9.	Fœtal pulsation,		140 per minute.
2.	"	"	142 "	10.	"	"	152 "
3.	"	"	140 "	11.	"	"	140 "
4.	"	"	150 "	12.	"	"	143 "
5.	"	"	144 "	13.	"	"	144 "
6.	"	"	140 "	14.	"	"	141 "
7.	"	"	140 "	15.	"	"	160 "
8.	"	"	144 "				

From these two tables it seems that when the pulsation varies from 120 to 140, the probability is that the fœtus will be a male, and when the pulsation varies from 140 to 160, the fœtus will likely be found to be a female. But there are some exceptions to these facts. In three cases in which the pulsation was from 150 to 160, the fœtus proved to be a male; and in fifteen cases in which the pulsation varied from 116 to 138, the fœtuses were found to be females. It therefore appears that there is less frequent variation in the pulsation in the male fœtus than in the female; or rather that there are fewer cases in which the heart's action exceeds 140 in the male, than that it falls below that number in the female.

These tables are exceedingly interesting, however, as far as they go; and the subject is well worthy further attention.—*Edin. Med. Journ.*, June, 1870.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

62. *Toxic Action of Pyrogallic Acid.*—In a communication made to the Academy of Sciences on the 1st of March, 1869, M. J. Personne proposed that poisoning by phosphorus should be treated by the administration of oil of turpentine, on the grounds that phosphorus produces its poisonous effects by removing oxygen from the blood, and that this action is prevented by turpentine. It occurred to him that this view of the theory of phosphorus-poisoning would be greatly strengthened were similar physiological effects found to be produced by other substances, which agree with phosphorus in its deoxidizing property, but present no other remarkable resemblance to it. With the object of ascertaining this, M. Personne made some experiments with pyrogallic acid, the results of which he now briefly narrates (*Comptes Rendus*, 4 Octobre, 1869, p. 749). Two dogs received by injection into the stomach 30 and 60 grains respectively of pyrogallic acid, in a large quantity of water. Poisonous symptoms quickly supervened in both, and these symptoms closely resembled those that are caused by phosphorus. After death, the liver was found greatly enlarged, the heart soft and friable and filled with clots of black blood, and the bladder contained a brown fluid resembling that which is obtained when an alkaline solution of pyrogallic acid is shaken up with air. A microscopic examination of the heart and liver revealed an immense quantity of fat. The muscular fibres of the heart were concealed by fat globules; and the liver of the dog that had received 30 grains weighed nearly 8000 grains, or about $\frac{1}{18}$th of the whole weight of the animal. It is thus shown that two substances which agree in little else than their power of abstracting oxygen from the air cause nearly identical symptoms and morbid changes in the living economy, notwithstanding their great dissimilarity in general properties and in origin. M. Personne believes that the above results distinctly prove that both phosphorus and pyrogallic acid produce death by asphyxia, which may be either rapid or slow, according as the quantity absorbed is such as to deprive the blood of its oxygen with greater or less rapidity.—*Journal of Anat. and Phys.*, May, 1870.

63. *Poisoning by Carbolic Acid.*—The subject of tar-poisoning, which is now attracting a good deal of attention in connection with the extensive employ-

ment of carbolic acid, is not by any means a novel one. It has been long well known that various preparations of tar, if applied freely to the skin, were capable of absorption, and might bring about certain special symptoms. The reader will find an account of these in Hebra's work on Skin-Diseases, vol. ii. p. 43. Numerous observers have recently met with cases in connection with the use of carbolic acid; and we publish this week an interesting account of one, by Dr. Wallace, of Liverpool.

We may briefly advert to some of the points to which future observers should direct their attention. The most constant symptom is *black* urine. It has been proved that this occurs in an equally marked form, whether tar or some colourless preparation of it be the agent employed. It has been noticed over and over again from carbolic acid. There is yet some hesitation on the part of chemists in deciding as to the exact cause of the colour. Dr. Stevenson, of Guy's Hospital, gives his opinion against the presence of colouring matter from the blood. He proved that the black urine did not contain more than the normal quantity of iron. We may note, also, that black urine does not usually earn the epithet of "smoky," since it does not become opaque. Sometimes it is perfectly bright. It rarely contains albumen. The hypothesis that the colouring matter is derived from the tar itself seems the most probable. Dr. Hughes proved years ago that creasote given internally produced exactly the same changes.

Next, we want careful observations as to the constitutional symptoms which attend this condition of urine. In slight cases there appear to be none; but in the more severe, vomiting, delirium, and even tendency to coma, may be induced. Does the condition of slight blood-poisoning by carbolic acid prejudice, or otherwise, a patient's chance of recovery after an operation?

Thirdly, we want more information as to the occurrence of the symptoms, referred to in connection with different forms of solution of carbolic acid. A weak watery solution freely used appears to involve the most risk; and some believe that with oil there is but little, and in the form of plaster none.

Lastly, it is well worth investigation, whether the use of carbolic acid and its allies may not exert considerable influence on certain diseases of the nervous system. We noticed a few weeks ago the remarkable rapidity with which it causes the skin to tingle after immersion, and the fact that it would induce aching of nerves in the limb far above the parts which had been immersed.

In conclusion, we must offer a caution as to the too free external use of this agent; it would appear to be quite possible to encounter, inadvertently, considerable risk. Although we are not aware of any cases of actual death from its legitimate surgical use, we know of several in which alarming symptoms occurred. Dogs are very easily killed by carbolic acid baths. The remedy is the free use of diluents taken by the mouth; and it is equally useful if employed as a precaution.—*Brit. Med. Journal*, April 30, 1870.

64. *Poisoning by Phosphorated Ether.*—At a meeting of the Imperial Academy of Medicine, January 25, M. MARRIOTTE communicated an observation on toxic symptoms produced by phosphorated ether. They occurred in a patient suffering from locomotor ataxy, who, being a prey to an access of the violent darting pains characteristic of that disease, had, in accordance with the advice of his physician, taken every hour, in soup, a tablespoonful of a mixture composed of four grammes of phosphorated ether, mint water, and syrup of gum, of each sixty-four grammes. The darting pains disappeared; but the last dose of the medicine was followed by the ordinary symptoms of irritant poisoning. The patient was for two or three days in a very precarious state, but finally recovered, under suitable treatment.

M. DEVERGIE, in the course of the discussion which followed the communication, observed that phosphorated ether was a very bad preparation, and one which should never be employed. The ether contained in it volatilized, and the phosphorus remained, consequently its strength was quite uncertain.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Treatment of Carbuncle by Pressure. By M. L. BENNETT, M. D., of Burdett, N. Y.

Mr. J. D. consulted me November 19, 1869, for a carbuncle on the back of the neck over the second cervical vertebra, which had first appeared a week before, but presented no sign of opening; the diameter of the tumour was three inches; it was quite painful, so much so that the patient could not sleep. I advised pressure by means of adhesive strips applied concentrically, commencing at the margin of the tumour with narrow strips overlapping each other slightly, until within half an inch of centre, which space was left for the discharge. The other sides were treated in the same manner.

November 21. Found tumour an inch in diameter, and discharging from ten small openings, $\frac{1}{8}$ of an inch in diameter. He said he had been free from pain since I applied the pressure, and was able to sleep; the strips were very loose; applied new ones.

23*d.* Carbuncle reduced to the size of an ordinary boil; the integuments soft and yielding; the ten small openings spoken of in last visit had consolidated into one large one, the size of a dime, and discharging freely of pus; reapplied the strips and ordered a poultice of soap and sugar to be applied to the part left bare of adhesive strips.

25*th.* Swelling nearly gone; the dead tissue easily detached, leaving a cavity large enough to receive a good-sized horse chestnut; reapplied the strips, requesting him to use the poultice as before; saw him again in four days; the swelling was all gone and the opening nearly healed.

This mode of treating carbuncle, as recommended by Dr. O'Ferrall, of Dublin, Dr. John Ashhurst, Jr., of the Episcopal Hospital, and others, should, I think, supersede all other methods. It relieves the patient of pain and cures in less time than incisions, and at the same time avoids the risk incurred in making incisions on aged persons.

Clot in the Heart during Parturition. By W. F. SANFORD, M. D., of Greenpoint, Brooklyn, N. Y.

At 6 A. M., Nov. 30th, I was called to attend Mrs. A., an apparently healthy woman, æt. thirty-four, who had not expected to be confined until two or three weeks later. She has three living healthy children, and her previous labours were said to have been perfectly normal. Her friends informed me that for many weeks she had been in a very melancholy state of mind, and strangely firm in the conviction, in spite of all reasoning, that she should die in the expected confinement. I found her tossing wildly about the bed in a most hysterical manner, and wishing to be let alone "to die." She struggled violently to oppose an examination, but after much trouble I succeeded sufficiently to find the os uteri slightly dilated

and the head presenting. There was considerable hemorrhage, with no visible cause, excepting her violent tossing, but this soon ceased as the head descended.

As the severe bearing-down pains came on, she was more quiet, and at 9½ A. M. she was delivered of a dead child, well formed, but evidently for many hours lifeless. I then learned that she had had a "slight fall" two days previous, since which time she had "felt no life."

After the delivery of the "after-birth," which gave a little trouble, the uterus contracted well, and the patient was quiet and apologized for her strange fears and behaviour. I left her about an hour after the birth of the child. As she was very weak, though feeling well, I ordered brandy to be given her in small doses often repeated until she became stronger.

Soon after reaching home word came that she was still weaker, and I ordered spts. ammoniæ aromat. to be given with the brandy until I could return. At 11.30 I again saw her. She was raving and tossing about the bed in a most violent manner, complaining of severe pains in her back, and wildly gasping for air. I examined the uterus, fearing internal hemorrhage, but found it hard and small. I then gave her large doses of morphia, but with no effect. Finding this fail, I put her under the influence of chloroform, which quieted her readily, and as she recovered from its influence she was much better, and I left her at 1.30 P. M.

She remained comparatively quiet, but complaining of much pain, until about 4 o'clock, when she eagerly wished me to be sent for. I found her in a most alarming state, shrieking for help, and gasping for breath; face livid, and covered with cold sweat. I again gave her chloroform, but soon stopped, as it seemed to excite motion. She was then, as her friends expressed it, "more quiet and like herself" than since the first hour after her delivery. But about 5 o'clock she had a slight convulsion and died comatose.

Post-mortem made with the assistance of Dr. Van Gieson, twenty hours after death, revealed a most characteristic, *ante-mortem*, fibrinous clot in the right ventricle of the heart, making also a complete cast of the pulmonary artery for an inch and a half, and finally completely cutting off the supply of blood to the lungs.

Intra-uterine Meningeal Apoplexy, caused by Violence at Seven Months, producing General Paralysis, Talipes Calcaneus of both Feet, and Deformity of both Hands; Death one hour after birth by Apnœa. By CHARLES A. LEALE, M.D., Fellow of the New York Academy of Medicine, Physician to N. W. Dispensary, New York, etc.

February 22, 1870, I was called to attend Mrs. A., aged 33, multipara, whom I was told had been in labour for several hours. On arrival, the os was found to be dilating, and the patient was having moderately severe uterine contractions. Upon a second examination a few moments after, the os was found well dilated, and I endeavoured to diagnosticate the presentation, but found presenting a soft tumour, about seven inches in circumference, through which could be felt the cranial bones, but not with sufficient exactness to satisfy me in regard to the particular portion presenting, so I determined to wait a proper length of time for nature to reveal the secret. After waiting half an hour, and as no progress had been made, I gave pulv. secale cornuti ℥j in infusion, which, in about fifteen minutes, increased the uterine contractions sufficiently to expel the head of the

fœtus; but to complete labour considerable manipular force was necessary, when a monster of huge dimensions was brought to view.

The child did not make the slightest effort to respire. There was pulsation in the funis. Flagellation, and alternate sprinkling with hot and cold water, produced a violent spasmodic contraction of the diaphragm, which caused the entire infra-mammary region to be very much depressed. The condition of atelectasis pulmonum continued, although the child had been born about five minutes. The cord was now severed, and about half an ounce of blood was allowed to flow slowly from the fœtal extremity. The tongue, which had again fallen back, was drawn forward to its normal position in the mouth. A sudden spirt of about a drachm more of blood was let flow, when the constriction was relieved, and the child began to breathe very feebly, and so continued its respirations at long intervals. The heart beat very feebly. The pupils were widely dilated, did not respond to the influence of a bright light, and the child was suffering from all the symptoms of severe compression of the brain. This condition lasted for one hour, when the child ceased breathing.

Necropsy.—Male, born at full time; weight eight and a half pounds; body and limbs abnormally long, measuring from head to heel twenty-one inches; very imperfectly nourished; atrophy of muscles; very little adipose tissue.

Head.	Occipito-frontal measurement,	14½ inches.
	Biparietal, "	12 "

The flexor muscles of the hands and feet were very much contracted, causing luxations of each of these four joints; the palmar surfaces of the hands were resting directly against the forearms, and it required considerable pressure to extend them to their normal positions; the bones of all four extremities were abnormally long, the forefingers being two inches, and the thumbs one and a half inches in length.

The feet were in the true position for talipes calcaneus; the great toe, for its entire length, resting against the tibia. The foot was four and a half inches, and the great toe one and a half inches in length. Upon endeavouring to bring the foot in its normal position, the dislocation of the lower end of the tibia backwards was increased.

The bones were normally ossified, and, from appearances, it could easily be conceived that the fœtus was perfect up to the time of reception of injury.

The tumour on the head, situated directly over the right parietal protuberance, was now examined, and, as before stated, was seven inches in circumference. It fluctuated, and would partly disappear upon firm, continued pressure. An incision, about five inches in length, was made directly over it, when the galea aponeurotica was found to be pressed up, and through its thin walls a liquid was easily detected. To prevent its destruction, if possible, a counter opening was made directly through the soft bones, when, immediately, dark, venous blood oozed out. By pressure on the outside of the tumour it was easily emptied by a small opening into the cranial cavity. The entire calvarium was now removed. There was quite a serous infiltration in the arachnoid. The vessels of the pia mater were considerably congested. The entire brain was removed, and, when freed from extraneous blood, weighed thirteen and three-quarter ounces. The base of the brain was in a normal condition, no extravasations or clots being found. Upon slicing the cerebrum, it was found abnormally softened, but, otherwise, nothing wrong was discovered.

The mother is a very healthy woman. Her four previous labours had been natural, and the children born were perfect. She had enjoyed excellent health during her pregnancy with this child, until seven months, when, while returning from Brooklyn on one of the ferries, she received a severe contusion. As the boat approached the dock, a violent current of wind caused the end of the pier to be violently struck; just at that moment she was standing at the door, and was thrown with great violence against the edge of it, receiving the entire effect upon her abdomen. She fainted, and it was several minutes before she was able to rise and ride to her home. From this time she felt the most feeble motion only of the fœtus, although it had for the two previous months been quite active; in fact she often supposed it dead, notwithstanding she grew considerably in size.

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Renal Abscess, discharging externally for six years. Reported by J. STOCKTON HOUGH, M. D., late Resident Physician to Philadelphia Hospital.

C. B., æt. 47, was admitted into the Surgical Ward of the Philadelphia Hospital, March 17, 1869, at which time she suffered from a discharge of pus from an opening in the right lumbar region, just above the crest of the ilium, supposed to be due to the necrosis of the last-named bone. No other diagnosis had been made until the *post-mortem* examination revealed the nature of the affection.

She had been blind for eight years. At the time of admission she had also an ulcer on her leg, which was healed in five days. After this the quantity discharged from the abscess increased six ounces per day. She had not been confined to her bed until she came into the hospital. No difficulty in passing her water until the last two days.

This discharge of pus had been constant, though variable in quantity for a period of six years, increasing the last month. She died from pure exhaustion, four months after her admission.

The *post-mortem* examination revealed no other lesion than that of the kidney on the right side, which was enlarged, and contained numerous abscesses, in one of which was found a triangular calculus, about the size of a walnut. The fistulous opening was not direct, but quite oblique, admitting a fine probe, which probably struck the calculus and gave the impression that the bone was exposed, which led to the error in diagnosis. It is exceedingly rare to find abscess of the kidney discharging externally for so protracted a period.

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Case of Congenital Absence of Uterus and Ovaries. By S. HERTZ, M. D., of Boonville, Indiana.

Miss E., æt. 40, unmarried, had always enjoyed good health till within the last year of her life. A few months previous to her death she came under my care for a slight dyspeptic disorder, which, on close examination, proved to be due to compression of the stomach consequent upon an enormously enlarged cancerous liver. There was nothing in the patient's general appearance indicative of serious trouble, and had not physical signs revealed the condition of the liver, it would not have been suspected. From the time she first sought medical aid up to the time of her death, three months afterwards, there was little in the patient's general aspect to occasion alarm, except the dyspnœa occasioned by the enlarged liver.

The *post-mortem* examination made by my friends, Drs. Barker, Darby, and myself, showed the liver to be greatly enlarged by cancerous deposit;

stomach and intestines free from any deposit; kidneys somewhat enlarged and indurated. The chief point of interest, however, was a complete absence of the uterus and ovaries. The vagina was normal, both as regards length and capacity, terminating above in a cul-de-sac. The clitoris was well developed, together with the labia and mons veneris. The breasts were large and plump, the whole external aspect attested the attributes of a well-formed woman.

Fibro-cystic Disease of the Ovary, with Post-mortem Examination. By S. L. BLATCHLY, M. D., of Sparta, Washington County, Pa.

In the early part of April, 1866, I was called to see Mrs. M., in consultation with my friend, Dr. Strause. She reported some enlargement in the left iliac region, which had existed for about two years.

On examination we decided the case to be one of ovarian enlargement, from three to four inches in diameter. Nothing special occurred in the case, except a gradual enlargement, for some three years, when I was hastily summoned to see the patient again, and found her in the most extreme agony. She said the tumour had broken, and she could feel the water moving in her bowels whenever she turned, and could not feel the tumour any more. Very great pain, tenderness, tension, and distension now existed, which precluded deep pressure on digital examination. Treated the case, for the time, as one of peritoneal inflammation. In five or six days the patient had much improved, and now with some difficulty I could discover the tumour, much smaller than before, and somewhat flaccid. Soon the tumour began to enlarge, and nineteen days after the first rupture a second took place, with a recurrence of all the unpleasant symptoms as detailed before. I again treated her as before, with like good effects.

She now had a short respite from her extreme suffering, of three to four weeks, after which the cyst again gradually filled, insomuch as to require paracentesis that some relief might be obtained, which was performed in the line of the linea alba, and six quarts of fluid removed, giving temporary ease. The cyst rapidly filled again, and the trocar introduced at the same point as before, but this time failed to enter the cyst, and the instrument giving the impression of passing into a fibrous body. Still hoping to relieve her sufferings, I again inserted my trocar into the left iliac region and drew off five quarts of fluid. The right side not lessening in proportion, after a few days I introduced the trocar into the right iliac region and removed about eight quarts more of fluid. During all this time there was evidence of more or less irritation and probable inflammation.

She gradually sank, and died in a few days.

Post-mortem nine hours after death.—In presence of Drs. Strause, Cary, and Sharp. The tumour was of fibrous character with numerous cysts of various sizes, containing dark bloody serum. On breaking up the adhesions between the tumour and the peritoneum, the tumour, intestines, spleen, pancreas, portion of liver, and stomach, were found agglutinated in one general mass.

On removing the tumour as best I could, and tracing it to its origin, it was found to have originated in the left ovary and Fallopian tube. The ovary was broken down in its central portion, and contained bloody pus. The fundus of the uterus was somewhat enlarged, and contained in its structure two fibrous tumours, $1\frac{1}{4}$ and $\frac{1}{2}$ inch in diameter.

At the entrance of the left Fallopian tube there was a small sac of black

grumous matter, and midway in the uterine canal there was complete stricture; right ovary somewhat diseased, omentum almost entirely absorbed, and the vessels of the abdominal viscera completely obliterated; liver studded over with small hard bodies of bony consistence; gall-bladder largely distended; spleen and pancreas healthy, but completely adherent to the diseased structure; kidneys normal; bladder somewhat constricted; small and large intestines so completely imbedded in the tumour I could not separate them; lungs sound. The extensive adhesions in the case were, no doubt, the result of the spontaneous rupturing of the cyst, thereby causing more or less inflammation, which resulted in the remarkable and extensive adhesions. The post-mortem developments in this case, together with the phenomena following the spontaneous rupturing of the cyst, would seem to contraindicate any operation for the successful removal of the tumour, after such rupturing had taken place, inasmuch as the inflammation consequent on the operation, as also on the rupturing of the cyst, would compromise the life of the subject.

DOMESTIC SUMMARY.

Bromide of Potassium in Saccharine Diabetes.—The No. of the *American Practitioner* for January last contains an interesting paper on this subject by Prof. AUSTIN FLINT, of New York. He relates three cases treated by the bromide in doses of 15 to 20 grains, three times a day, combined with ordinary diabetic diet. In each there was a rapid diminution of thirst, a decrease in the specific gravity of the urine, and an improvement in the general health.

In one of the cases there was a remarkably rapid and great improvement, but, Dr. F. remarks, "it is by no means as yet certain that the improvement is not chiefly or entirely due to the dietetic management. The case affords a striking example of the tolerance of an anti-diabetic diet. The patient, in addition to all kinds of meat, inclusive of fish, oysters, and eggs, is allowed celery, lettuce, onions, cauliflower, tomatoes, and sour apples. The last-named article, eaten raw and roasted, he finds a very good substitute for potatoes. He takes tea and coffee with cream. He eats butter freely. A small quantity of toasted bread is allowed. Camplin's bran-bread he found unpalatable. With this bill of fare he is thus far perfectly satisfied to give up sugar, and, with the exception of a little bread, all articles abounding in starch. A little sherry or claret wine is not interdicted."

Dr. F. states that his "object in giving an account of these cases is not to claim in behalf of the bromide of potassium a special curative agency in saccharine diabetes; but to suggest to physicians to make trial of this remedy, in order to determine whether it be not entitled to be classed with other remedies which are sometimes useful. In the first of the three cases its usefulness was apparently clearly manifested."

Bromide of Potassium in Sick-headache.—Dr. L. P. YANDELL recommends (*American Practitioner*, February, 1870) the bromide of potassium as a cure for sick-headache, and states he had been subject for more than half a century to that affection, when at the suggestion of a medical friend he took half a drachm of bromide of potassium with the happiest effect. He has since resorted to the same remedy on various occasions with equal benefit.

Dr. J. S. DAVIS, of Iuka, Mississippi, states (*American Practitioner*, June, 1870) that he has fully verified the value of the bromide in such cases, and has never found anything comparable to it. He adds: "My wife has been subject to and sorely afflicted with sick-headache for more than twenty-five years, which

has been returning with shorter and shorter intervals for years, until of late a week never passed without a severe attack, and sometimes two or more in one week. For the last four weeks she has been taking the bromide, in five or six grain doses, three times daily, and has never had the slightest return since she has been on its use."

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Permanganate of Potassa in Oxaluria.—Dr. H. S. THORNE relates (*Michigan Univ. Med. Journal*, May, 1870) a case of oxaluria in which he used the permanganate with the most happy result. Dr. Rose indorses its value. It should be given in half-grain doses dissolved in water thrice daily, and always on an empty stomach; for in contact with organic matter it is stated to be decomposed, yielding its oxygen to any substance that will receive it. It is given on the hypothesis that uric and oxalic acid occur as the result of a deficient oxidation.

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Hydrate of Chloral.—In a very interesting paper on this subject (*Boston Medical and Surgical Journal*, June 16, 1870), Dr. EDWARD H. CLARKE indorses the conclusions arrived at by Dr. DaCosta in his article on chloral in the No. of this Journal for April, 1870. Dr. Clarke details the clinical history of nine cases which illustrate most of the physiological actions of therapeutic doses of chloral. One of these well illustrates the mutual action between chloral and morphia, which Dr. DaCosta pointed out in his paper. It is "CASE VI., *Opium Eating.* An octogenarian lady took morphia by the advice of her physician thirteen or fourteen years ago. She continued to take it of her own accord afterwards, and has persisted in the habit thus acquired. She now takes about two grains of sulphate of morphia every night. In consequence of an attempt to discontinue its use, awhile ago, she became restless, excited, nervous, and sleepless, with symptoms not unlike those of delirium tremens. After two or three days and nights had elapsed without sleep, I gave her 15 grs. of chloral hydrate. This quantity calmed her. A second dose of the same amount was followed by a sleep of several hours. Unfortunately, the habit of taking morphia could not be broken up, and she resumed her customary dose at night. This has quieted and comforted her, but has not always induced sleep. When it has not, 15 grs. of chloral have always been sufficient to put her to sleep in a short time. Less chloral was required to produce sleep when morphia had been previously administered, than when the latter article had not been given."

Dr. Clarke states that a fourth of a grain of one of the salts of morphia, followed in an hour by 15 or 20 grains of hydrate of chloral, will produce a greater anæsthetic and hypnotic effect than a larger dose of either of them given alone. In many cases, where a certain dose of morphia is sufficient to allay pain, but not to produce sleep, it is better to follow the morphia by hydrate of chloral than to repeat the former.

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Reliable Preparation of Conium.—Dr. J. C. REEVE, of Dayton, Ohio, calls attention (*The American Practitioner*, June, 1870) to Squibb's fluid extract of conium, made from the unripe fruit or seed, according to the suggestions of Dr. Wm. Manlius Smith, of Manlius, New York. The dose to begin with is five minims, to be gradually increased. Dr. Reeve says: "For *convulsive and irritable coughs* it has proved in our hands a remedy of decided value. We used it during the closing period of an epidemic of hooping-cough, and we believe we saw great benefit from it, although we are not yet ready to abandon belladonna. For the frequent and distressing cough of phthisis and bronchitis we have had frequent recourse to it, and would not willingly do without it. Every one knows the bad effects so often caused by morphia in these diseases, and how very often we cannot resort to it at all. In such cases conium has proved to be everything we could wish—quieting the cough at night, and allowing the patient his much-needed rest, without any constipation, deranged digestion, or other distressing symptoms following."

Method by which After-treatment in Operation for Fistula in Ano is rendered Unnecessary.—Dr. J. J. CHISOLM proposes (*Baltimore Med. Journ.*, Feb. 1870), after the fistulous passage has been laid open, a plan of treatment which he says not only protects the patient from hemorrhage but also does away with the painful daily insertion of lint between the lips of the wound until the latter becomes filled with granulations. Many years ago Dr. C. was induced "to substitute for this annoying, painful, and inefficient dressing, a single application of the liquid persulphate of iron. This was used for the purpose of insuring a surface-sloughing of the sides of the wound, just sufficient to preclude the possibility of the immediate growing together of the recently-cut surfaces, although close apposition be permitted. Long experience has sustained the utility of this application, and this plan of after-dressing, immediately after incising fistula in ano, is now extensively adopted by surgeons in the United States.

"Immediately after making the incision, a large camel-hair brush, or a sponge mop, saturated with the liquid persulphate or perchloride of iron, is drawn through the wound, care being taken to bring the iron styptic cautery in contact with the entire surface. The effect is threefold:—

"1. To cauterize the surfaces and prevent agglutination of the newly-cut walls.

"2. To arrest hemorrhage.

"3. To clot the blood in the wound, and oppose this physical barrier to the approximation of the surfaces.

"Should the hemorrhage be very free, it may be necessary to secure in the wound, for a few hours, a compress of lint, saturated with the iron styptic.

"Beyond this immediate and single application of the iron, no further local treatment will be required. Daily ablutions, either with cold or warm water, as most agreeable to the patient, will be needed for cleanliness. For ordinary cases of fistula in ano, it will not be necessary for the patient to keep the bed, nor even the house, for any length of time; and often business can be resumed the day after the operation."

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Improvement of Cammann's Stethoscope.—Dr. THOS. G. SNELLING describes (*Med. Record*, March 15, 1870) a modification of Cammann's stethoscope which he has employed for the past four years, and which, in cases where much accuracy is required, as in examination of heart or lungs, or where it is desired to precisely locate a morbid sound, or in emaciated chests, he has found of great advantage. It can be used also upon an ordinary flexible tube instrument. "It consists simply of an India-rubber rim attached to, and acting as a continuation of the rim or lip of the ordinary mouth of the stethoscope, by which, even by the most gentle pressure, all air is excluded by the elastic expansion of the India-rubber rim.

"Its advantage will be evident at a glance in auscultation over the carotids, where the pressure made by the ordinary unshielded lip of the instrument must cause an adventitious murmur; over the jugulars for venous murmur, over or under the clavicle when a patient is so thin as to preclude the complete adjustment of the ordinary instrument to the exclusion of the air; in patients so emaciated as to make it impossible to apply the sounding tube upon or between the ribs, and where it is desirable to locate a cardiac murmur over one or another valve."

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Induction of Premature Delivery as a Prophylactic Resource in Midwifery.—The *New York Medical Journal* (February, 1870) contains an instructive paper on this subject, by Prof. T. GAILLARD THOMAS. "There are," he says, "certain dangers inherent to the process of parturition which, in spite of scientific midwifery and the prophylactic resources of intelligent hygienic management, must forever invest it with importance, and produce a certain loss of life in its performance."

He thinks that, "in most instances, the most serious complications of labour, both as regards mother and child, may be recognized by their peculiar premonitory signs, one, two, or even three months before the end of pregnancy, and

being recognized may fortunately often be avoided. My impression is, that nothing will in the future tend to diminish the mortality attendant upon parturition so markedly as the induction of premature delivery for the removal of mother, child, or both, from that condition upon the continuance of which depends the danger which menaces them."

The following list presents the morbid states for which he considers the operation indicated:—

"1. Deformity of the pelvis. 2. Placenta prævia. 3. Aggravated uræmia. 4. Excessive vomiting. 5. Placental apnœa. 6. Commencing epithelioma. 7. Death of child and consequent septicæmia. 8. Threatened death of child. 9. Approaching death of mother. 10. Amniotic dropsy. 11. Previous rupture of uterus or performance of the Cæsarean section. 12. Excessive accidental hemorrhage. 13. Previous difficulty in deliveries of large children, or of children with ossified sutures. 14. Tumours obstructing the pelvis."

Prof. T. discusses each of these conditions in turn, giving clinical cases as instances for a resort to the operation and for such indications as appear to require illustration from their novelty or the doubtfulness of their claims.

Prof. T. considers "the end of the eighth month, *i.e.*, the ninth menstrual epoch, is the most favourable time for the induction of premature labour."

Prof. T. makes a marked distinction between premature labour and abortion. "The former," he remarks, "denotes a premature expulsion of the contents of the uterus; the latter, a failure in the results of utero-gestation. Consequently, the induction of premature labour is in one essential respect different from that of abortion, and is called for in the fulfilment of different indications. The former, being resorted to after the period of viability of the child, does not involve the sacrifice of its life, but often adds to its prospect of living by removal of it from a position of danger, and sometimes even of certain death; or, to put the matter more tersely, abortion is resorted to in the interest of the mother alone at the expense of the life of the child: premature labour is induced sometimes for the sake of the mother, sometimes for that of the child, and sometimes in the interest of both. For the sake of preventing irrelevancy of discussion in any argument which may be suggested by my remarks, I would particularly point out the fact, that the subject which I have undertaken is strictly limited to the consideration of the induction of premature labour, and in no way concerns that of the induction of abortion."

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Intra-Uterine Medication.—The June No. of the *New York Medical Journal* contains an interesting paper on this subject by Dr. J. C. Nott. He points out the dangers of intra-uterine injections, and says: "It is admitted by all cautious practitioners, that injecting the uterus is often a somewhat hazardous operation, that may, when we see no reason to anticipate it, be followed by disagreeable consequences; and it is also admitted that to insure safety (if some kind of double canula be not used) it is indispensable that the cervical canal should be well open, so as to allow free regurgitation of the injected fluid."

He shows "that in certain morbid conditions of the uterus (conditions, too, which there is reason to believe are not very rare), it is in the best possible state for admission into the circulation of air, or any fluid that may be forced upon its denuded vessels.

"It has already been stated that the normal uterus, between the menstrual periods, has an internal capacity of not more than ten or twelve minims; but, while labouring under chronic catarrh and other conditions above alluded to, the organ may be found in a very different state. It becomes more or less enlarged, the walls sometimes thinned, the cavity dilated, the tissues softened, and in a condition to yield more readily to the distending force of a syringe. Even when the depth of the uterus, measured with the sound, is increased by disease an inch beyond its normal depth, its cavity is still a small one—say one to three drachms. The greatest dilatation usually occurs in cases of retroflexion, where the fundus is in a pendent position, and the cervix more or less mechanically obstructed. In such cases the body of the uterus is often dilated; the secretions are incarcerated and become putrid.

"Suppose we determine to inject a medicated fluid into one of these relaxed,

denuded uteri, with its utricular follicles gaping and its capillaries and veins exposed as we have described, according to Arthur Farre and other good authorities. The pipe of the syringe is introduced through the long, narrow cervix up the fundus, the pipe pretty well filling up the cervical canal. The piston of the syringe is then forced down, and what follows? Sufficient fluid must be injected to fill the cavity of the body and distend it, before the cervix is sufficiently forced open to allow the fluid to regurgitate by the side of the pipe. Numerous instances have occurred under such circumstances, in which not only severe uterine colics have followed, but almost instant collapse, and even death in a short time."

With proper caution Dr. N. thinks uterine injections may be, in some cases, advantageously resorted to.

"To my mind," he says, "one of the most important principles in the local treatment of endometritis, and one which I have before insisted on, is the cleansing of the organ of its foul secretions, by frequent ablutions with a syringe. This is a plain surgical principle, that applies with as much force to the uterus as to any other hollow organ or diseased cavity. Mucus not only putrefies with great rapidity, but rapidly communicates the putrefactive process to blood. If putrid discharges be allowed to collect in the cavity of the uterus (as they are sure to do in flexions), it is difficult to imagine how recuperative action can take place; for not only do such discharges irritate the surface with which they are in contact, but doubtless more or less contaminate the blood. The insertion once in a week or ten days of a little nitrate of silver, chromic acid, Churchill's iodine, etc., cannot keep pace with the disease, while on the other hand experience proves that such remedies are not free from danger.

"This principle of ablution, with some detergent wash, I think will be conceded, and the only question is as to its feasibility and safety.

"It must be confessed that some degree of doubt, difficulty, and danger, should always attach to the use of uterine injections; that they should not be resorted to if we can gain our ends without them; and it is only the conviction that they cannot be dispensed with which has driven me to their employment. With proper caution, however, I think, the manipulation presents but little difficulty or risk. The uterus, as a rule, by gentle procedure, is soon educated to tolerate any medication we may think proper to adopt.

"First, expose the os uteri with Sims's speculum, mine, or any other that allows the os to be caught with a tenaculum and drawn a little down so as to straighten the uterine channel and tighten its lining membrane; then introduce a double canula, with a very large eye like one I have devised, into the body of the organ. It has been objected that this canula is too large, but I reply that no uterus should be freely injected, into which an instrument of this size cannot be introduced—a free regurgitant current is the only guarantee of safety. If necessary, the os uteri must first be dilated with tents, dilating instruments of some kind, or the knife. When once open, the canula keeps it open.

"As we cannot tell in each case, before testing it, what degree of sensibility the organ may possess, it is proper to proceed at the beginning with extreme caution. First, throw in through the canula, very gently, a little tepid water, or, what is better a weak solution of morphia. If the uterus proves to be sensitive, continue this simple wash for several days, until the sensibility is overcome. Tepid salt and water is also very soothing. After toleration is established and a free outlet is secured, the organ may then be freely washed out. We may next move a little more boldly and substitute a weak solution of iodine, carbolic acid, or other drug thought advisable, and increase the strength if the case does not progress favourably. Bearing in mind, however, the important fact that, if we attempt to wash the uterus out by copious injections with articles that *coagulate albumen*, the return-current is arrested both *in* the double canula and at the internal os *around* it. Solutions of common salt, of muriatic acid, alum, or iodine, do not coagulate albumen. Also *weak* solutions of carbolic acid, permanganate of potassa, pyroligneous acid, and other similar antiseptics, may be used very diluted, for, although some of them do not coagulate albumen, when dilute, they precipitate it in minute flocculi, that easily flow through any opening.

"Muriatic acid not only dissolves the thick tenacious mucus of the cervix, but the hard, blood-coagula formed by persulphate of iron. This fact I think worthy of note.

"I will not say that I would proscribe the use *in toto* of solid nitrate of silver, or the concentrated solution of chromic acid. When other remedies fail me, I may be driven to their use, but not without fear and trembling, having fresh in my memory several cases in which deplorable results have followed the use of these remedies even in experienced hands."

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Adipose Deposits in the Omentum and Abdominal Walls of Woman as a Source of Error in Diagnosis.—Dr. Geo. Pepper read a paper on this subject before the Philadelphia Obstetrical Society and related three illustrative cases.

All three patients had experienced considerable anxiety at the occurrence, and in two instances they firmly believed themselves pregnant, so that one of them even had engaged her accoucheur. The third fancied herself the victim of ovarian disease, and was beginning to fail in health, owing to the ever-present dread this thought inspired. In the first case, the excessive deposition of fat took place at the termination of the menstrual life, and after an exhausting uterine hemorrhage had been checked; in the second, after the cure of a profuse purulent uterine and vaginal discharge; whilst in the third, after a rather unusually abrupt cessation of the catamenia. In all, some accustomed discharge had ceased; and in all the deposition of fat took place principally in the abdominal walls, and probably in the omentum and various tissues of the abdomen and pelvis, without materially implicating other portions of the body. It appears improbable that, in any or each of these three cases, the enlargement of the abdomen could have been merely an accidental concomitant, for it so promptly followed the cessation of the habitual discharge, and continued to increase so regularly for a time, and yet came to a stand-still, or diminished, without any material aid from treatment.

"The diagnosis of these conditions," Dr. P. remarks, "should be made only after a careful consideration of the history, and a thorough physical examination of the patient; for only by such a combination can an intelligent opinion be formed. The fact of a recent suppression of the menses, or of some other habitual discharge, and, coincidently with this, the abdominal enlargement, must strongly direct suspicion, especially if from her age, or other circumstances it would appear improbable that the woman had conceived. As a rule, the more profuse the discharge has been, and the more sudden the cessation, other things being equal, the greater will be the deposit of adipose tissue, and the more profound the psychical impression on the patient."—*American Journ. Obstetrics*, May, 1870.

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Ovarian Tumour; two Pregnancies during its Existence; Extirpation; Recovery, and third Pregnancy following.—Dr. A. B. Crosby records (*Michigan Univ. Med. Journ.*, March, 1870) an interesting case of this, the subject of which was 28 years of age, commenced to menstruate at 16, and was married at 25. Two months after marriage menstruation ceased.

Two months subsequently there was evident enlargement of the abdomen, which attracted little attention, because the patient was suffering from nausea. Six months after marriage there existed marked pain in the right iliac region. The abdomen was very prominent, and just below the umbilicus measured 42 inches. The usual signs of pregnancy existed, and it was supposed to be complicated with ascites. At full term she was delivered of a healthy boy. After confinement the abdomen only slightly diminished in size. Six months after the birth of her child paracentesis abdominis was performed, and thirty-five pounds of a slightly amber-coloured fluid removed. A small, solid tumour, the size of a hen's egg, could now be detected. A month later Prof. D. Crosby saw the patient and diagnosticated ovarian dropsy. One month after this (June, 1863) the patient again became pregnant. In January, 1864, she was tapped, and in March was delivered of a healthy girl.

On the 15th of June following she was again tapped, after which, a tumour about the size of a pint bowl could be felt in the left iliac region.

During the latter part of the nine months after the last tapping the tumour increased rapidly in size, and the patient desired its removal; which operation was performed March 22d, 1865. On September 1st, 1866, she was delivered of a living, healthy, male child, after a natural labour.

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Spasmodic Action of the Abdominal Muscles simulating the Motions of the Fœtus in Utero.—A very curious case of this, which persisted for eight years, is related (*Boston Med. & Surg. Jl.*, May 5, 1870) by Dr. C. G. PUTNAM. The subject of it was the mother of three children, æt. 40, well proportioned and healthy.

When first seen by Dr. P. the enlargement of the abdomen appeared to be that of the full period of gestation. He noticed the frequent occurrence of abrupt vertical motions so strong, at times, as to jerk the whole trunk of the body, and cause her to "catch her breath." "Occasionally she swayed from side to side, as if compelled to yield to heavy lateral plunges within. She thought herself to be near the close of pregnancy, and a short time previously the late Dr. Gay, who requested me to take charge of the case, had passed a night in the house in expectation of the parturition. I made a cursory auscultation; but heard only the intestinal sounds, and without further investigation left her, with the presumption that she was on the eve of confinement.

"On my next visit a thorough, careful auscultation satisfied me that there was neither soufflet nor fœtal pulsation. I then ascertained that the texture and length of the neck of the uterus were not changed, and that the uterus was not materially, if at all, increased in size, so that if there was an ovum it was not, at least, intra-uterine. This was in February, 1850. Upon questioning, she then said that her last child was born in February, 1846, weaned in April, 1848. Menstruation immediately occurred and continued till July, 1848. In May, 1849, she was as large as at the full term. In December, 1849, seven months afterward, had a fall, flowed profusely, and supposed she had miscarried.

"From this point the record of the case went on as follows: May 31st, 1850. —Menstruation now present. Has suffered from "bearing down." Os and cervix uteri less firm than before. Externally a sulcus an inch and a half broad and about an inch deep, extends from three inches above to three inches below the umbilicus, which latter is thus in a deep groove or pit. Abdomen more prominent on the left than on the right; resonant on percussion. The breasts enlarged and tender; follicles of areolæ turgid and moist. July 28th, 1850.—The sensation of distension "cramming" in the abdomen so great as to cause faintness. No change in the cervix or fundus. Abdomen now more prominent on the right. September 7th, motion less, but the feeling of distension greater.

"March 25th, 1852.—For the last nine months has been gradually but very decidedly lessening in size. Menstruation has recurred. May, 1852.—I find the size increasing. The motion is violent, and on pressing the abdomen a solid body, apparently, rolls under the hands or is thrown from side to side, as if from an alternate action of the recti muscles. Jan. 1st, 1853.—No menstruation since July, 1852. Nov. 1853.—Constant pain in back and limbs—cannot lie in bed for more than an hour—often passes the night in her chair."

The case gave rise to various opinions, but the patient was persuaded that she was pregnant.

"On the last of October, 1857, she was suddenly attacked with painful vomiting and retching, great distress and jactitation. The liver could be felt below the edge of the ribs. Jaundice ensued, and without mitigation of symptoms, continued till her death, which took place in a fortnight after this acute attack.

"At the autopsy there was found—nothing: that is to say, nothing to account for the chronic affection. The abdominal parietes were somewhat more than two inches in thickness. There was enlargement and granulation of the liver, of recent origin. There was a degree of adipocerous transformation in the omentum, but it did not affect its size, and could not be associated with nor explain the phenomena. No unusual distension either of the large or small intestine. Uterus and appendages normal."

Erectile Cancroid of the Vagina.—Dr. William Goodell related to the Philadelphia Obstetrical Society the following case: "A robust lady, who had a dark and livid tumour projecting slightly from the vulva, from which she had never suffered any pain or inconvenience. Hemorrhage setting in, her physician called Dr. G. in consultation. He found a smooth vascular tumour, originating one inch below the meatus urethræ, as large as a horse-chestnut, giving out a profuse hemorrhage in minute jets, from an apparently ulcerated surface. As ice, liq. ferri subsulph., and other styptics had failed, a double ligature was thrown round the mass. The hemorrhage was thus arrested, and as, from its unusual site, it was considered a benign erectile tumour, a favourable prognosis was given. The growth, however, soon increased so rapidly as to fill up the vagina, and the lady died one month afterwards, exhausted by repeated hemorrhages. An autopsy revealed a large cauliflower excrescence, springing from the anterior wall of the vagina, which showed under the microscope the characteristic cells of such growths. The womb, bladder, and rectum exhibited no trace of the disease, and all the other internal organs were healthy. Dr. G. said that the early diagnosis of a cauliflower excrescence is extremely difficult, owing to its resemblance to an erectile growth; indeed, Virchow asserts that the excrescence is at first a simple papillary tumour, which ultimately passes into the cancroid state; and that therefore all vascular tumours of the vagina and uterus should be looked upon with suspicion."

Other members related their experience in regard to these cancroids, but had never seen one occupying the above site.—*Am. Journ. Obstetrics*, May, 1870.

THE WILLS OPHTHALMIC HOSPITAL,

Race Street, between Eighteenth and Nineteenth Sts., Philadelphia.

A Course of Lectures, Didactic and Clinical, on Ophthalmic Surgery, will be given at the Hospital during the months of November, December, and January.

The course will embrace all of the important branches of Ophthalmic Science, and will include the *Anatomy and Pathology of the Eye, the Physiology of Vision, the Refraction and Accommodation of the Eye, the Use of the Ophthalmoscope, and the Operative Surgery of the Eye.*

The large Clinics of the Hospital will afford abundant opportunities for the demonstration of the *General Diseases, Optical Defects, and Operative Surgery of the Eye.*

Each member of the class will be afforded instruction in the Use of the Ophthalmoscope, and in the practice of Operations on the Cadaver.

The Diagnosis of the Optical Defects which produce *Long, Short, or Weak Sight, Astigmatism, Strabismus, etc.*, and their Correction by the Scientific Use of Glasses, will be illustrated by apparatus and Clinical demonstration.

Fee for the Course . . . . . Ten Dollars.

Operative and Clinical Surgery of the Eye.
R. J. Levis, M. D., N. W. cor. Arch and 13th Sts.

Anatomy, General Diseases of Eye, and Ophthalmoscopy.
Geo. C. Harlan, M. D., 1806 Chestnut St.

Physiology of Vision, Refraction, and Optical Defects of the Eye.
Wm. Thomson, M. D., 1607 Locust St.

UNIVERSITY OF MICHIGAN.

MEDICAL DEPARTMENT.

The Lectures of the Session of 1870–71 will commence as usual, on the first day of October, and continue for six months.

Fees.

To Students of Michigan, $20 for the first year, and $10 for each subsequent year. To all others, $35 for the first year, and $10 for each subsequent year.

For further information, address ABM. SAGER, M. D., *Dean.*
Ann Arbor, Michigan.

PHILADELPHIA LYING-IN CHARITY.

SCHOOL OF OBSTETRICS AND DISEASES OF WOMEN.

The next winter course of instruction in Practical Obstetrics will begin in the third week in October, and continue, with three lectures each week, during the winter.

The teaching of this department of the institution, as it has been maintained regularly since its establishment by Dr. Warrington in 1827, embraces everything pertaining to the practical management of pregnant, parturient, and puerperal women required to fit practitioners of medicine for the care of obstetric patients, either in simple or complicated cases.

Demonstrative teaching is combined with practical experience at the bedside of the patient, the members of the class having placed under their care, in rotation, the large number of patients applying at the Charity for treatment during labour and lying-in at their own homes. Nurses and nourishment being furnished by the institution, the most favourable opportunity is afforded for the satisfactory study of these cases that can possibly be obtained among any class of charity patients.

In the lecture-room the pupils are thoroughly instructed in the details of the nice and careful management of ordinary cases of labour, of the diseased conditions of pregnancy, of the complications of labour involving manual and instrumental aid in parturition, and of the treatment of morbid states arising to the puerperal woman and her new-born child.

Especial attention is given to the study of diagnosis of the position of the fœtus, the members of the class being required to practise the touch upon models adapted for the purpose until a proficiency is attained in that very important point.

The application of the forceps is made the subject of thorough and careful study, and the members of the class are required to familiarize themselves with the use of the instruments upon the models.

The nurses of the institution are instructed in the management of lying-in cases in the presence of the medical class, so that gentlemen have an opportunity to become acquainted with the duties of monthly nurses, which to country practitioners is a matter of incalculable value, not merely in enabling them to suggest as to the care of their own patients, but also to give instruction to women who desire to engage in such occupation in neighbourhoods where skilful and educated nurses cannot be obtained.

The object of the institution is to afford every means to the young physician to make an expert obstetrician, being able, from theoretical as well as experimental knowledge, to take charge of any case likely to be presented to him, with confidence and skill.

The diploma of the institution is given to graduates of regular medical schools, testifying as to the management of their cases as pupil-physicians to the satisfaction of the Board of Managers.

Fee for the course	$15 00
Diploma (if requested)	5 00

Apply at the institution, No. 126 North Eleventh Street, or to

ALBERT H. SMITH, M. D., *Lecturer*,
No. 113 South Broad St., Philadelphia.

The clinic for diseases of women, under the care of the assistant physicians of the Charity, affords at all seasons of the year unequalled facilities for the study of uterine pathology and treatment in the large number of patients constantly under the care of the Charity, with every variety of disease incident to the reproductive organs of women.

ASSISTANT PHYSICIANS.

GEORGE PEPPER, M D.. JAMES F. WILSON, M. D.,
CHARLES H. THOMAS, M. D., WM. H. H. GITHENS, M. D.

MEDICAL INSTITUTE,

920 Chestnut Street, Philadelphia.

ROBERT BOLLING, M. D.
JAMES H. HUTCHINSON, M. D.
H. LENOX HODGE, M. D.

OFFICE STUDENTS are received, through their preceptors, or upon their own application, for a part or the whole of a three years' course of study.

They are admitted to the Winter Examinations, and to the Summer School of Medicine, and thus have the benefit of a systematic course of examinations during both the winter and summer.

They are instructed *practically* in Anatomy, Bandaging, Dressing of Fractures, Operative Surgery, Examination of Urine, Obstetrics, and Percussion and Auscultation.

CLINICAL INSTRUCTION is provided for them at the
Pennsylvania Hospital,
Philadelphia Hospital,
Children's Hospital,
Wills Hospital for the Eye.

Bed-side Instruction is given them during February, March, and April, in the wards of the Pennsylvania Hospital by Dr. James H. Hutchinson. They are also enabled to attend women during confinement.

Fee for One Year—One Hundred Dollars.

WINTER EXAMINATIONS.—The Course will begin with the Lectures at the University of Pennsylvania, and will continue until the close of the session.

Fee Thirty Dollars.

SUMMER SCHOOL OF MEDICINE.—The Seventh Session will begin on March 1, 1871, and students may enjoy its privileges without cessation until October.

Examinations, Lectures, and Clinical Instruction will be given during April, May, June, and September.

Fee Fifty Dollars.

CANDIDATES FOR ADMISSION TO THE ARMY OR NAVY, and those desiring promotion to a higher grade, may obtain the use of the Class Rooms, and be furnished with private instruction.

CLASS ROOMS contain a Cabinet of Materia Medica, Bones, Anatomical Preparations, Bandages, Manikins, Illustrations, Text-Books, Microscope, Chemical Reagents, etc.

DISSECTION, SURGICAL OPERATIONS, BANDAGING, AND DRESSING OF FRACTURES may be practised to the best advantage.

During the year, Lectures will be delivered on

REGIONAL ANATOMY.
PERCUSSION AND AUSCULTATION.
URINARY DEPOSITS AND TESTS.
DISEASES OF THE EYE.

Apply to
H. LENOX HODGE, M. D.,
N. W. cor. Ninth and Walnut Streets, Phila.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSION OF 1870–71.

THE Collegiate Year in this Institution embraces a Preliminary Autumnal Term, the Regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1870–71, will commence on Wednesday, September 14, 1870, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, exclusively by members of the Faculty. Students designing to attend the Regular Session are strongly recommended to attend during the Preliminary term, but attendance during the latter is not required. During the Preliminary Term Clinic and Didactic Lectures will be given in the same number and order as in the Regular Session.

The Regular Session will commence on Wednesday, October 12, and end about the 1st of March, 1871.

FACULTY.

ISAAC E. TAYLOR, M. D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M. D., LL.D., Emeritus Professor of Surgery.

FORDYCE BARKER, M. D., Professor of Clinical Midwifery and Diseases of Women.

FRANK H. HAMILTON, M. D., LL. D., Professor of Practice of Surgery with Operations and Clinical Surgery.

LEWIS A. SAYRE, M. D., Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M. D., Professor of Surgical Anatomy with Operations and Clinical Surgery.

W. H. VAN BUREN, M. D., Professor of Principles of Surgery with Diseases of the Genito-Urinary System and Clinical Surgery.

BENJAMIN W. MCCREADY, M. D., Professor of Materia Medica and Therapeutics and Clinical Medicine.

GEORGE T. ELLIOT, M. D., Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

STEPHEN SMITH, M. D., Professor of Descriptive and Comparative Anatomy and Clinical Surgery.

AUSTIN FLINT, M. D., Professor of Principles and Practice of Medicine and Clinical Medicine.

R. OGDEN DOREMUS, M. D., Professor of Chemistry and Toxicology.

WILLIAM A. HAMMOND, M. D., Professor of Diseases of the Mind and Nervous System and Clinical Medicine.

AUSTIN FLINT, Jr., M. D., Professor of Physiology and Microscopy, and Secretary of the Faculty.

SPECIAL LECTURES IN THE REGULAR TERM.

OPHTHALMOLOGY . . . . By Professor HENRY D. NOYES, M. D.
DISEASES OF THE SKIN . . . " Professor FOSTER SWIFT, M. D.

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons in the Bellevue Hospital and the great Charity Hospital on Blackwell's Island.

This Session will consist of two Recitation Terms; the first from March 14th to July 1st, and the second from September 1st to the opening of the Regular Session. During this Session there will be daily recitations in all the departments held by members of the regular Faculty and their assistants. Regular Clinics will also be held daily.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including Clinical Lectures	$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	$ 5 00
Recitations and Clinics	35 00
Chemical Laboratory (including material)	25 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Prof. AUSTIN FLINT, JR., Bellevue Hospital Medical College.

UNIVERSITY OF NEW YORK.

MEDICAL DEPARTMENT.

426 East Twenty-sixth St., opposite Bellevue Hospital, New York City.

THIRTIETH SESSION, 1870-71.

FACULTY OF MEDICINE.

Rev. Isaac Ferris, D. D., LL. D., Chancellor of the University.
Martyn Paine, M. D., LL. D., Emeritus Professor of Materia Medica and Therapeutics.
John W. Draper, M. D., LL. D., Emeritus Professor of Chemistry and Physiology, President of the Faculty.
Alfred C. Post, M. D., Professor of the Principles and Operations of Surgery, with Military Surgery and Hygiene.
Charles A. Budd, M. D., Professor of Obstetrics, with Diseases of Women and Children, and Clinical Midwifery.
John C. Draper, M. D., Professor of Chemistry.
Alfred L. Loomis, M. D., Professor of Institutes and Practice of Medicine.
William Darling, A. M., M. D., F. R. C. S., Professor of Descriptive and Surgical Anatomy.
Henry Draper, M. D., Professor of Physiology, Registrar of the Faculty.
William H. Thomson, M. D., Professor of Materia Medica and Therapeutics.
J. W. S. Gouley, M. D., Professor of Clinical Surgery and Genito-Urinary Diseases.

The collegiate year is divided into two Sessions—a regular Winter Session, and a Spring, Summer, and Autumn Session. The latter is auxiliary to the former, and the design of the Faculty is to furnish instruction to medical students throughout the year. *Attendance on the regular Winter Session is all that is demanded of the candidates for graduation.* Those who attend the other session receive a Certificate of Honor, as having pursued voluntarily a fuller course than usual.

The Spring and Summer Session is principally of a practical and clinical character, and affords particular facilities to students who have already taken one course in schools where such practical advantages exist to a less extent. The course consists also partly of lectures and examinations on the subjects necessary for graduating in medicine, conducted by the Professors of the regular Faculty and their assistants. These examinations will be addressed to both first and second course students.

For the purpose of making the visits to the wards of the hospitals as available as possible, the class is divided into sections. One division at a time is instructed in Practical Diagnosis, Prescription, and Treatment of Patients. The course begins in the middle of March, and continues till the beginning of June, when the Summer Commencement is held. During the summer the College Clinics are kept open.

The Autumn or Preliminary Session commences on the first of September, and continues till the opening of the regular session. It is conducted on the same plan as the Spring and Summer Session.

The regular Winter Session occupies four and a half months—commencing on the third of October, and continuing till the middle of February. The system of instruction embraces a thorough Didactic and Clinical Course, the lectures being illustrated by two clinics each day. One of these daily clinics will be held either in Bellevue or the Charity Hospital. The location of the College building affords the greatest facilities for Hospital Clinics. It is opposite the gate of Bellevue Hospital, on Twenty-sixth Street, and in close proximity to the ferry to Charity Hospital on Blackwell's Island, while the Department of Out-door Medical Charity, and the Hospital Post-mortem Rooms, are across the street. The students of the University Medical College will be furnished with admission tickets to these establishments free of charge. The Professors of the practical chairs are connected with one or both of these hospitals.

Besides the Hospital clinics, there are eight clinics each week in the College building.

The Faculty desire to call attention particularly to the opportunities for dissection. *Subjects are abundant and are furnished free of charge*, and the Professor of Anatomy spends several hours each day in demonstration in the dissecting-room.

Fees for the Winter Course.

Full Course of Lectures	$140 00
Matriculation	5 00
Demonstrator's Fee, including material for dissection	10 00
Graduation Fee	30 00

Fees for the Spring, Summer, and Autumn Course.

Students who have attended the Winter Course will be admitted free of charge. Those who have not attended the Winter Course will be required to pay the Matriculation Fee and $30; and should they decide to become pupils for the winter, the $35 thus paid will be deducted from the price of the winter tickets.

For the purpose of assisting meritorious individuals, the Faculty will receive a few *beneficiaries*, each of whom will be required to pay $43 per annum and the Matriculation Fee.

For further particulars and circulars, address the Registrar,

Prof. HENRY DRAPER, M. D.,
University Medical College, 426 East 26th St., New York City.

JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

The next Annual Session will commence on the 2d Monday in October, 1870. Preliminary Lectures will begin on the first Monday in September.

FACULTY.

Joseph Pancoast, M. D.,	Professor of Anatomy.
Samuel D. Gross, M. D.,	Professor of Surgery.
S. Henry Dickson, M. D.,	Professor of Practice of Medicine
Ellerslie Wallace, M. D.,	Professor of Obstetrics.
B. Howard Rand, M. D.,	Professor of Chemistry.
John B. Biddle, M. D.,	Professor of Materia Medica.
J. Aitken Meigs, M. D.,	Professor of Institutes of Medicine.

Fees for full course (in common with all the regular colleges of Philadelphia and New York), $140; Matriculation, $5; Graduation, $30.

Board from $5 to $7 per week. Clinical Instruction will be given daily at the College and twice a week at the Philadelphia and Pennsylvania Hospitals. Ample material for dissection is provided under the new anatomy act.

For full particulars see the annual announcement, which will be sent on application to

B. HOWARD RAND, M. D.,
Dean of the Faculty.

PHILADELPHIA SCHOOL OF ANATOMY,

Chant Street, Tenth Street above Chestnut, opposite the Mercantile Library.

The Summer Course of Lectures at the Philadelphia School of Anatomy will reopen on September 6, 1870, with Lectures on the Brain and Nervous System on Tuesdays, Thursdays, and Fridays, at 2½ o'clock P. M. The Dissecting Room will be constantly open.

The Winter Course will begin on Tuesday, October 10, 1870, and will continue till the end of February, 1871.

A Systematic Course of Lectures on Descriptive and Surgical Anatomy will be delivered on Mondays, Wednesdays, Thursdays, and Fridays, at 7 o'clock P. M., illustrated by Dissections, Models, Drawings, &c. The Microscopic Anatomy of the various tissues will be shown by the Class Microscope.

Dissection will be carried on under the direct and personal supervision of the Assistant Demonstrators of Anatomy, with an abundant supply of material.

Fee for the Course $10.

In connection with the institution there will be delivered also during the Winter the following additional courses:—

II. Operative Surgery, by Dr. W. W. Keen, . . . $10.

Special facilities will be afforded students, candidates for the Army or the Navy, or others who may desire to take a Course on Operative Surgery.

III. Bandaging and Fractures, by Dr. O. H. Allis, . . $10.

For further information, apply at the Rooms, or to

WILLIAM W. KEEN, M. D., 1619 Chestnut Street. (3½—5 p. m.)

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA,

CHARLESTON, SOUTH CAROLINA.

The Forty-Second Course of Lectures in this Institution will commence on Monday the 7th of November, 1870, and be continued until the 1st Saturday in March, 1871.

FACULTY.

J. E. Holbrook, M. D., Emeritus Professor of Anatomy.
E. Geddings, M. D., Emeritus Professor of the Institutes and Practice of Medicine, and Professor of Clinical Medicine.
R. A. Kinloch, M. D., Professor of Surgery.
F. M. Robertson, M. D., Professor of Obstetrics and the Diseases of Women and Children.
J. P. Chazal, M. D., Prof. of General Pathology, Pathological Anatomy and Hygiene.
Middleton Michel, M. D., Professor of Physiology.
George E. Trescot, M. D., Professor of Materia Medica and Therapeutics.
C. U. Shepard, Jr., M. D., Professor of Chemistry.
J. F. M. Geddings, M. D., Professor of the Institutes and Practice of Medicine.
F. L. Parker, M. D., Professor of Anatomy.
W. H. Bailey, M. D., Demonstrator of Anatomy.

In addition to the Lectures of the Professor of Clinical Medicine, Clinical Lectures will also be delivered at the City Hospital, by the Professors of Surgery and Obstetrics, and Diseases of Women and Children.

Expenses of the School.—Matriculation Fee (paid once), $5 00; Entire Course of Lectures, including Clinics, $130 00; Demonstrator's Ticket, $10 00; Graduation Fee, $30 00.

The Fees, in all cases, to be paid at the commencement of the Course.

Good board can be obtained in the city of Charleston at as low a rate as in any city in the United States.

The Winter climate of Charleston should be an inducement to bring students from the North and East, who desire to avoid the rigors of a northern winter in the prosecution of their Medical studies.

For further information address the Dean or either of the Professors.

F. M. ROBERTSON, M. D., *Dean of the Faculty.*

ALBANY MEDICAL COLLEGE.

TERM, 1870.

FACULTY.

James McNaughton, M. D., President; Theory and Practice of Medicine.
James H. Armsby, M. D., Principles and Practice of Surgery and Clinical Surgery.
Edmund R. Peaslee, M. D., LL. D., Diseases of Women.
William P. Seymour, M. D., Obstetrics and Diseases of Children.
Meredith Clymer, M. D., Diseases of the Nervous System and of the Mind.
John V. Lansing, M. D., Physiology and Clinical Medicine.
Albert Van Derveer, M. D., General and Special Anatomy.
Henry R. Haskins, M. D., Surgical and Descriptive Anatomy.
George T. Stevens, M. D., Ophthalmic and Orthopedic Surgery.
John M. Bigelow, M. D., Materia Medica.
Maurice Perkins, A. M., Chemistry and Toxicology.
Hon. Ira Harris, LL. D., President of the Board of Trustees; Medical Jurisprudence.

The next Term commences on the first Tuesday in September, 1870, and continues sixteen weeks. For Circulars, apply to

J. V. LANSING, M. D., *Registrar.*

RUSH MEDICAL COLLEGE.

FACULTY.

J. V. Z. Blaney, A. M., M. D., Prof. of Chemistry and Pharmacy.
Jos. W. Freer, M. D., Prof. of Physiology and Microscopic Anatomy.
J. Adams Allen, M. D., LL. D., Prof. of Principles and Practice of Medicine.
E. Ingals, M. D., Prof. of Materia Medica and Medical Jurisprudence.
DeLaskie Miller, M. D., Prof. of Obstetrics and Diseases of Women and Children.
R. L. Rea, M. D., Prof. of Anatomy.
Moses Gunn, A. M., M. D., Prof. of Principles and Practice of Surgery and Clinical Surgery.
Edwin Powell, M. D., Professor of Military Surgery and Surgical Anatomy.
Joseph P. Ross, M. D., Prof. of Clinical Medicine and Diseases of the Chest.
Edward L. Holmes, M. D., Prof. of Diseases of the Eye and Ear.

Charles T. Parkes, M. D., Demonstrator.
H. F. Cheesbrough, M. D., Clinical Assistant and Prosector of Surgery.
Francis L. Wadsworth, M. D., Assistant to Professor of Physiology.

The Twenty-Eighth Annual Course of Lectures will commence on Wednesday, September 28th, 1870, and continue eighteen weeks.

FEES.—Lectures	$55
Matriculation	5
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PENNSYLVANIA COLLEGE OF DENTAL SURGERY,

THE FIFTEENTH ANNUAL SESSION, 1870-71.

FACULTY.

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J. M. Barstow, D. D. S., Demonstrator of Mechanical Dentistry.
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